

ARTICLE 8. PUBLIC WATER SUPPLY

Rule 1. Public Water Supply Standards

327 IAC 8-1-1 Community water system; fluoridation; phosphate additives

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 1. Each community water system which has fluoridation or phosphate added shall comply with the following:

(1) The following fluoride compounds: sodium fluoride, sodium silico fluoride, hydrofluosilicic acid and such other fluoride compounds as may be approved by the commissioner for such use, may be added to such water supplies providing the total content of fluoride ion (F-) after such addition does not exceed two (2.0) milligrams per liter (mg/l).

(2) Phosphate additives may be added to the water for treatment of iron, manganese, scale and corrosion problems. Such additives shall be manufactured of ingredients generally regarded as safe (GRAS items) under the provision of 21 CFR 182, Subpart G, and shall meet quality standards as set forward in the Water Chemicals Codex, NAS (1982 edition). Total phosphate concentration shall not exceed ten (10) mg/l measured as PO₄. Product may be provided in liquid or dry form. Containers in which the agents are packaged shall be labeled indicating product information and general instructions for use. As a minimum, the label must specify name and application of product, percentage phosphate concentration as PO₄, certification that product complies with the Water Chemicals Codex, NAS (1982 edition). In addition, if it is provided in liquid form, the label shall specify pH and specific gravity. The containers must also be marked identifying manufacturing batch number. All liquid products must be treated for bacteria control at the time of manufacture with a potably approved bacteria control agent.

(Water Pollution Control Board; 327 IAC 8-1-1; filed Sep 24, 1987, 3:00 p.m.: 11 IR 705; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1003)

Rule 2. Drinking Water Standards

327 IAC 8-2-1 Definitions

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-18

Sec. 1. In addition to the definitions contained in IC 13-11-2, IC 13-18, and 327 IAC 1, the following definitions apply throughout this rule:

(1) "Act" means the Safe Drinking Water Act (42 U.S.C. 300f et seq.).

(2) "Action level" means the concentration of lead or copper in water specified in section 36(c) of this rule which determines, in some cases, the treatment requirements contained in sections 36 through 47 of this rule, that a water system is required to complete.

(3) "Adjustment program" means the addition of fluoride to drinking water by a public water system for the prevention of dental cavities.

(4) "Administrator" means the administrator of the U.S. EPA.

(5) "Best available technology (BAT)" means best technology, treatment techniques, or other means which the commissioner finds are available, after examination for efficacy under field conditions, and not solely under laboratory conditions, and after taking cost into consideration. For the purpose of setting maximum contaminant levels for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon.

(6) "Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

(7) "Commissioner" means the commissioner of the Indiana department of environmental management or the designated agent of the commissioner.

(8) "Community water system" means a public water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

(9) "Compliance cycle" means the nine (9) year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three (3) three-year compliance periods. The first calendar year cycle begins January 1, 1993, and ends December 31, 2001; the second begins January 1, 2002, and ends December 31, 2010; the third begins January 1, 2011, and ends December 31, 2019.

(10) "Compliance period" means a three (3) year calendar year period within a compliance cycle. Each compliance cycle has three (3) three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993, to December 31, 1995; the second from January 1, 1996, to December 31, 1998; the third from January 1, 1999, to December 31, 2001.

(11) "Confluent growth" means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

(12) "Contaminant" means any micro-organisms, chemicals, waste, physical substance, radiological substance, or any wastewater

introduced or found in the drinking water.

(13) "Conventional filtration treatment" means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

(14) "Corrosion inhibitor" means a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

(15) "CT" or "CTcalc" is the product of residual disinfectant concentration (C) in milligrams per liter determined before or at the first customer and the corresponding disinfectant contact time (T) in minutes, such as $C \times T$. If a public water system applies disinfectants at more than one (1) point prior to the first customer, it must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or total inactivation ratio. In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point. $CT_{99.9}$ is the CT value required for ninety-nine and nine-tenths percent (99.9%)(3-log) inactivation of *Giardia lamblia* cysts. $CT_{99.9}$ for a variety of disinfectants and conditions appears in Tables 1.1-1.6, 2.1, and 3.1 of paragraph 141.74(b)(3).¹

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is the inactivation ratio. The sum of the inactivation ratios or total inactivation ratio shown as:

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is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than one (1.0) is assumed to provide a 3-log inactivation of *Giardia lamblia* cysts.

(16) "Diatomaceous earth filtration" means a process resulting in substantial particulate removal in which:

(A) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum); and

(B) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

(17) "Direct filtration" means a series of processes, including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

(18) "Disinfectant" means any oxidant, including, but not limited to, chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic micro-organisms.

(19) "Disinfectant contact time" (T in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration (C) is measured. Where only one (1) C is measured, T is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or at where C is measured. Where more than one (1) C is measured, T is:

(A) for the first measurement of C, the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first C is measured; and

(B) for subsequent measurements of C, the time in minutes that it takes for water to move from the previous C measurement point to the C measurement point for which the particular T is being calculated.

Disinfectant contact time in pipelines must be calculated based on plug flow by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs must be determined by tracer studies or an equivalent demonstration.

(20) "Disinfection" means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

(21) "Domestic or other nondistribution system plumbing problem" means a coliform contamination problem in a public water system with more than one (1) service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

(22) "Dose equivalent" means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRUM).

(23) "Effective corrosion inhibitor residual" means a concentration sufficient to form a passivating film on the interior walls of a pipe for the purpose of sections 36 through 47 of this rule only.

(24) "Filtration" means a process for removing particulate matter from water by passage through porous media.

(25) "First draw sample" means a one (1) liter sample of tap water collected in accordance with section 37 of this rule, that has been standing in the plumbing pipes at least six (6) hours and is collected without flushing the tap.

(26) "Flocculation" means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

(27) "Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

(28) "Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

(29) "Ground water under the direct influence of surface water" means any water beneath the surface of the ground with:

- (A) significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia*; or
- (B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the commissioner. The commissioner's determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

(30) "Halogen" means one (1) of the chemical elements chlorine, bromine, or iodine.

(31) "Initial compliance period" means January 1993 to December 1995, for the contaminants listed in sections 4 (other than arsenic, barium, cadmium, fluoride, lead, mercury, selenium, and silver), 5, and 5.4(a) (other than benzene, vinyl chloride, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, and para-dichlorobenzene) of this rule.

(32) "Large water system" means a water system that serves more than fifty thousand (50,000) people for the purpose of sections 36 through 47 of this rule only.

(33) "Lead service line" means a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such lead line.

(34) "Legionella" means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

(35) "Manmade beta particle and photon emitters" means all radionuclides emitting beta particle and/or photons listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure", NBS Handbook 69, as amended August 1973, U.S. Department of Commerce, except the daughter products of thorium-232, uranium-235, and uranium-238.

(36) "Maximum contaminant level (MCL)" means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

(37) "Maximum contaminant level goal (MCLG)" means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur and which includes an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals.

(38) "Maximum total trihalomethane potential (MTP)" means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven (7) days at a temperature of twenty-five degrees Celsius (25°C) or above.

(39) "Medium size water system" means a water system that serves greater than three thousand three hundred (3,300) and less than or equal to fifty thousand (50,000) persons for the purpose of sections 36 through 47 of this rule only.

(40) "Near the first service connection" means at one (1) of the twenty percent (20%) of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

(41) "Noncommunity water system" means a public water system which has at least fifteen (15) service connections used by nonresidents or which regularly serves twenty-five (25) or more nonresident individuals daily for at least sixty (60) days per year.

(42) "Nontransient noncommunity water system (NTNCWS)" means a public water system that is not a community water system which regularly serves the same twenty-five (25) or more persons at least six (6) months per year.

(43) "Optimal corrosion control treatment" means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the water system to violate any national primary drinking water regulations for the purpose of sections 36 through 47 of this rule only.

(44) "Performance evaluation sample" means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the administrator. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

(45) "Picocuri (pCi)" means the quantity of radioactive material producing two and twenty-two hundredths (2.22) nuclear transformations per minute.

(46) "Point of disinfectant application" is the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water run-off.

(47) "Point-of-entry treatment device (POE)" is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in drinking water distributed throughout the house or building.

(48) "Point-of-use treatment device (POU)" is a treatment device to a single tap used for the purpose of reducing contaminants in drinking water at that one (1) tap.

(49) "Public water system" means a public water supply for the provision to the public of piped water for human consumption, if such system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least

sixty (60) days out of the year. "Public water system" includes any collection, treatment, storage, and distribution facilities under control of the operator of such system, including the operator or administrator of such system, and is used primarily in connection with such system and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system is either a community water system or a noncommunity water system, as defined in subdivisions (8) and (41).

(50) "Rem" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is one one-thousandth (1/1,000) of a rem.

(51) "Repeat compliance period" means any subsequent compliance period after the initial compliance period.

(52) "Residual disinfectant concentration" (C in CT calculations) means the concentration of disinfectant measured in milligrams per liter in a representative sample of water.

(53) "Sanitary survey" means an on-site inspection of the water source, facilities, equipment, construction, and operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, construction, and operation and maintenance for producing and distributing safe drinking water.

(54) "Sedimentation" means a process for removal of solids before filtration by gravity or separation.

(55) "Service line sample" means a one (1) liter sample of water collected in accordance with section 37(b)(3) of this rule that has been standing at least six (6) hours in a service line.

(56) "Single family structure" means a building constructed as a single family residence that is currently being used as either a residence or a place of business for the purpose of sections 36 through 47 of this rule only.

(57) "Slow sand filtration" means a process involving passage of raw water through a bed of sand at low velocity (generally less than four-tenths (0.4) meter per hour or forty-five (45) to one hundred fifty (150) gallons per day per square foot) resulting in substantial particulate removal by physical and biological mechanisms.

(58) "Small water system" means a water system that serves three thousand three hundred (3,300) persons or fewer for the purpose of sections 36 through 47 of this rule only.

(59) "Standard sample" means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

(60) "Supplier of water" means any person who owns and/or operates a public water system.

(61) "Surface water" means all water occurring on the surface of the ground, including water in a stream, natural and artificial lakes, ponds, swales, marshes, and diffused surface water.

(62) "System with a single service connection" means a public water system which supplies drinking water to consumers via a single service line.

(63) "Too numerous to count" means that the total number of bacterial colonies exceeds two hundred (200) on a forty-seven (47) millimeter diameter membrane filter used for coliform detection.

(64) "Total trihalomethanes (TTHM)" means the sum of the concentration in milligrams per liter of the trihalomethane compounds:

- (A) trichloromethane (chloroform);
- (B) dibromochloromethane;
- (C) bromodichloromethane; and
- (D) tribromomethane (bromoform);

rounded to two (2) significant figures.

(65) "Transient noncommunity water system (TWS)" means a noncommunity water system that does not regularly serve at least twenty-five (25) of the same persons over six (6) months per year.

(66) "Trihalomethane (THM)" means one (1) of the family of organic compounds, named as derivatives of methane, wherein three (3) of the four (4) hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

(67) "U.S. EPA" or "EPA" means the United States Environmental Protection Agency.

(68) "Virus" means a virus of fecal origin which is infectious to humans by waterborne transmission.

(69) "Waterborne disease outbreak" means the significant occurrence of acute infectious illness epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment as determined by the commissioner.

¹Federal Register, Part II, 40 CFR 141, June 29, 1989, Volume 54, Number 124, pages 27532 through 27534. (*Water Pollution Control Board*; 327 IAC 8-2-1; filed Sep 24, 1987, 3:00 p.m.: 11 IR 705; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1003; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2151; filed Aug 24, 1994, 8:15 a.m.: 18 IR 19; errata filed Oct 11, 1997, 2:45 p.m.: 18 IR 531; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 932)

SECTION 2. 327 IAC 8-2-5.5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-3 Analytical methods

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 3. Except as otherwise provided by this rule, the analytical procedures used as methods of analysis to determine the quality of water sampled shall be in accordance with this rule. (*Water Pollution Control Board; 327 IAC 8-2-3; filed Sep 24, 1987, 3:00 p.m.: 11 IR 706; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1006*)

327 IAC 8-2-4 Inorganic chemicals; maximum contaminant levels

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 4. (a) The following MCLs for inorganic chemicals apply to all community water systems, nontransient noncommunity water systems, and transient noncommunity systems except as provided in subsection (b):

<u>Contaminant</u>	<u>Level in Milligrams Per Liter</u>
Nitrate	10 (as nitrogen)
Nitrite	1 (as nitrogen)
Nitrate and nitrite	10 (as nitrogen)

(b) The commissioner may allow nitrate levels up to, but not to exceed, twenty (20) milligrams per liter in a noncommunity water system if the supplier of water meets all of the following conditions:

- (1) Such water will not be available to children under six (6) months of age.
- (2) There will be continuous posting of the fact that nitrate levels exceed ten (10) milligrams per liter and the potential health effects of exposure.
- (3) Local and state public health authorities shall be notified annually of nitrate levels that exceed ten (10) milligrams per liter.
- (4) No adverse health effects shall result.
- (5) The commissioner may require additional notice to the public as provided by section 15 of this rule.

(c) The following MCL for fluoride applies to all community water systems:

<u>Contaminant</u>	<u>Level in Milligrams Per Liter</u>
Fluoride	4.0

(d) The following MCLs for inorganic chemicals apply to all community water systems and nontransient noncommunity water systems:

<u>Contaminant</u>	<u>Per Liter Except Asbestos</u>
Antimony	0.006
Arsenic	0.05
Asbestos	7 (MFL) ¹
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide (free)	0.2
Mercury	0.002
Selenium	0.05
Thallium	0.002

¹MFL = million fibers per liter greater than ten (10) micrometers.

(e) For the inorganic chemicals listed in this section and nickel, the monitoring frequency is specified in section 4.1 of this rule and analytical methods are specified in section 4.2 of this rule.

(f) The commissioner hereby identifies the following as the best available technology, treatment technique, or other means available for achieving compliance with the MCLs for inorganic contaminants identified in subsections (a), (c), and (d), except fluoride:

BAT for Inorganic Chemicals Listed in This Section

<u>Chemical Name</u>	<u>BATs</u>
Antimony	2,7
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6 ² ,7
Cyanide	5,7,10
Mercury	2 ¹ ,4,6 ¹ ,7 ¹
Nitrate	5,7,9
Nitrite	5,7

Selenium 1,2³,6,7,9
Thallium 1,5

¹BAT only if influent mercury concentrations less than ten (10) micrograms per liter.

²BAT for Chromium III only.

³BAT for Selenium IV only.

Key to BATs in Table

1 = Activated alumina

2 = Coagulation/filtration

3 = Direct and diatomite filtration

4 = Granular activated carbon

5 = Ion exchange

6 = Lime softening

7 = Reverse osmosis

8 = Corrosion control

9 = Electrodialysis

10 = Chlorine

11 = Ultraviolet

.(Water Pollution Control Board; 327 IAC 8-2-4; filed Sep 24, 1987, 3:00 p.m.: 11 IR 706; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1006; filed Aug 24, 1994, 8:15 a.m.: 18 IR 22; filed Aug 25, 1997, 8:00 a.m.: 21 IR 34)

327 IAC 8-2-4.1 Collection of samples for inorganic chemical testing

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 4.1. (a) Community water systems shall conduct monitoring to determine compliance with the MCLs specified in section 4(a), 4(c), and 4(d) of this rule in accordance with this section. Nontransient noncommunity water systems shall conduct monitoring to determine compliance with the MCLs specified in section 4(a) and 4(d) of this rule in accordance with this section. Transient noncommunity water systems shall conduct monitoring to determine compliance with the MCLs specified in section 4(a) of this rule in accordance with this section.

(b) When a contaminant listed in section 4 of this rule exceeds the MCL, the supplier of water shall report to the commissioner under section 13 of this rule and shall give notice to the public under section 15 of this rule. Monitoring after public notification shall be at a frequency designated by the commissioner and shall continue until the MCL has not been exceeded in two (2) successive samples or until a monitoring schedule as a condition to a variance, exemption, or enforcement action shall become effective.

(c) Monitoring shall be conducted as follows:

(1) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point) beginning in the compliance period starting January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(2) Surface water systems, including systems with a combination of surface and ground sources, shall take a minimum of one (1) sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point) beginning in the compliance period beginning January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(3) If a system draws water from more than one (1) source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions, for example, when water is representative of all sources being used.

(4) The commissioner may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five (5) samples are allowed, provided that the detection limit of the method used for analysis is less than one-fifth ($1/5$) of the MCL. Compositing of samples must be completed in the laboratory.

(A) When a composite sample is analyzed, if the concentration in the composite sample is greater than or equal to one-fifth ($1/5$) of the MCL of any inorganic chemical, then a follow-up sample must be analyzed within fourteen (14) days at each sampling point included in the composite. These samples must be analyzed for the contaminants which exceeded one-fifth ($1/5$) of the MCL in the composite sample. Detection limits for each analytical method and MCLs for each inorganic contaminant are the following:

<u>Contaminant</u>	<u>MCL (mg/l)</u>	<u>Methodology</u>	<u>Detection Limit (mg/l)</u>
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Antimony	0.006	Atomic absorption; furnace	0.003
		Atomic absorption; platform	0.0008 ⁵
		ICP-mass spectrometry	0.0004
		Hydride-atomic absorption	0.001
Asbestos	7 MFL ¹	Transmission electron microscopy	0.01 MFL
Barium	2	Atomic absorption; furnace	0.002
		Atomic absorption; direct aspiration	0.1
		Inductively coupled plasma	0.002
			(0.001)
Beryllium	0.004	Atomic absorption; furnace	0.0002
		Atomic absorption; platform	0.00002 ⁵
		Inductively coupled plasma ²	0.0003
		ICP-mass spectrometry	0.0003
Cadmium	0.005	Atomic absorption; furnace	0.0001
		Inductively coupled plasma	0.001
Chromium	0.1	Atomic absorption; furnace	0.001
		Inductively coupled plasma	0.007
			(0.001)
Cyanide	0.2	Distillation, spectrophotometric ³	0.02
		Distillation, automated spectrophotometric ³	0.005
		Distillation, selective electrode ³	0.05
		Distillation, amenable, spectrophotometric ⁴	0.02
Fluoride	4.0	Colormetric SPADNS; with distillation	0.1
		Potentiometric ion selective electrode	0.1
		Automated alizarin fluoride blue; with distillation (complexone)	0.05
		Automated ion selective electrode	0.1
Mercury	0.002	Manual cold vapor technique	0.0002
		Automated cold vapor technique	0.0002
Nitrate	10 (as N)	Manual cadmium reduction	0.01
		Automated hydrazine reduction	0.01
		Automated cadmium reduction	0.05
		Ion selective electrode	1
		Ion chromatography	0.01
Nitrite	1 (as N)	Spectrophotometric	0.01
		Automated cadmium reduction	0.05
		Manual cadmium reduction	0.01
		Ion chromatography	0.004
Selenium	0.05	Atomic absorption; furnace	0.002
		Atomic absorption; gaseous hydride	0.002
Thallium	0.002	Atomic absorption; furnace	0.001
		Atomic absorption; platform	0.0007 ⁵
		ICP-mass spectrometry	0.0003

¹MFL = million fibers per liter greater than ten (10) micrometers.

²Using a 2x preconcentration step as noted in Method 200.7. Lower method detection limits may

be achieved when using a 4x preconcentration.

³Screening method for total cyanides.

⁴Measures "free" cyanides.

⁵Lower method detection limits are reported using stabilized temperature graphite furnace atomic absorption.

(B) If the population served by the system is greater than three thousand three hundred (3,300) persons, then compositing may only be permitted by the commissioner at sampling points within a single system. In systems serving less than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.

(C) If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed and the results reported to the commissioner within fourteen (14) days of collection.

(5) The frequency of monitoring for:

(A) asbestos shall be in accordance with subsection (d);

(B) antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, nickel, mercury, selenium, and thallium shall be in accordance with subsection (e);

(C) nitrate shall be in accordance with subsection (f);

(D) nitrite shall be in accordance with subsection (g); and

(E) arsenic shall be in accordance with subsection (l).

(d) The frequency of monitoring conducted to determine compliance with the MCL for asbestos specified in section 4(d) of this rule shall be conducted as follows:

(1) Each community and nontransient noncommunity water system is required to monitor for asbestos during the first three (3) year compliance period of each nine (9) year compliance cycle beginning in the compliance period starting January 1, 1993.

(2) If the system believes it is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, it may apply to the commissioner for a waiver of the monitoring requirement in subdivision (1). If the commissioner grants the waiver, the system is not required to monitor.

(3) The commissioner may grant a waiver based upon a consideration of the following factors:

(A) Potential asbestos contamination of the water source.

(B) The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

(4) A waiver remains in effect for the initial monitoring of the first three (3) year compliance period. Systems not receiving a waiver must monitor in accordance with the provisions of subdivision (1).

(5) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one (1) sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

(6) A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with the provision of subsection (c).

(7) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall take one (1) sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

(8) A system which exceeds the MCLs as determined in section 4 of this rule shall monitor quarterly beginning in the next quarter after the violation occurred.

(9) The commissioner may decrease the quarterly monitoring requirement to the frequency specified in subdivision (1) provided the commissioner has determined that the system is reliably and consistently below the MCL. In no case can the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four (4) quarterly samples.

(10) If monitoring data collected after January 1, 1990, are generally consistent with the requirements of this subsection, then the commissioner may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

(e) The frequency of monitoring conducted for nickel and to determine compliance with the MCLs in section 4 of this rule for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium shall be as follows:

(1) Ground water systems shall take one (1) sample at each sampling point during each compliance period. Surface water systems (or combined surface/ground) shall take one (1) sample annually at each sampling point.

(2) The system may apply to the commissioner for a waiver from the monitoring frequencies specified in subdivision (1).

(3) A condition of the waiver shall require that a system take a minimum of one (1) sample while the waiver is effective. The term

during which the waiver is effective shall not exceed one (1) compliance cycle which is nine (9) years.

(4) The commissioner may grant a waiver provided surface water systems have monitored annually for at least three (3) years and ground water systems have conducted a minimum of three (3) rounds of monitoring. (At least one (1) sample shall have been taken since January 1, 1990.) Both surface and ground water systems shall demonstrate that all previous analytical results were less than the maximum contaminant level. Systems that use a new water source are not eligible for a waiver until three (3) rounds of monitoring from the new source have been completed. The commissioner may grant a public water system a waiver for monitoring of cyanide, provided that the commissioner determines that the system is not vulnerable due to lack of any industrial source of cyanide.

(5) In determining the appropriate reduced monitoring frequency, the commissioner shall consider the following:

- (A) Reported concentrations from all previous monitoring.
- (B) The degree of variation in reported concentrations.
- (C) Other factors which may affect contaminant concentrations such as:
 - (i) changes in ground water pumping rates;
 - (ii) changes in the system's configuration;
 - (iii) changes in the system's operating procedures; or
 - (iv) changes in stream flows or characteristics.

(6) A decision by the commissioner to grant a waiver shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the commissioner or upon an application by the public water system. The public water system shall specify the basis for its request. The commissioner shall review and, where appropriate, revise the determination of the appropriate monitoring frequency when the system submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency becomes available.

(7) Systems which exceed the MCLs as calculated in subsection (k) shall monitor quarterly beginning in the next quarter after the violation occurred.

(8) The commissioner may decrease the quarterly monitoring requirement to the frequencies specified in subdivisions (1) and (2) provided it has determined that the system is reliably and consistently below the MCL. In no case can the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface water system takes a minimum of four (4) quarterly samples.

(f) All public water systems (community, nontransient noncommunity, and transient noncommunity systems) shall monitor to determine compliance with the MCL for nitrate in section 4(a) of this rule under the following monitoring schedules:

(1) Community and nontransient noncommunity water systems served by ground water systems shall monitor annually beginning January 1, 1993; systems served by surface water shall monitor quarterly beginning January 1, 1993.

(2) For community and nontransient noncommunity water systems, the repeat monitoring frequency for ground water systems shall be quarterly for at least one (1) year following any one (1) sample in which the concentration is greater than or equal to fifty percent (50%) of the MCL. The commissioner may allow a ground water system to reduce the sampling frequency to annually after four (4) consecutive quarterly samples are reliably and consistently less than the MCL.

(3) For community and nontransient noncommunity water systems, the commissioner may allow a surface water system to reduce the sampling frequency to annually if all analytical results from four (4) consecutive quarters are less than fifty percent (50%) of the MCL. A surface water system shall return to quarterly monitoring if any one (1) sample is greater than or equal to fifty percent (50%) of the MCL.

(4) Each transient noncommunity water system shall monitor annually beginning January 1, 1993.

(5) After the initial round of quarterly sampling is completed, each community and nontransient noncommunity system which is monitoring annually shall take subsequent samples during the quarter which previously resulted in the highest analytical result.

(g) All public water systems (community, nontransient noncommunity, and transient noncommunity systems) shall monitor to determine compliance with the MCL for nitrite in section 4(a) of this rule under the following monitoring schedules:

(1) All public water systems shall take one (1) sample at each sampling point in the compliance period beginning January 1, 1993, and ending December 31, 1995.

(2) After the initial sample, systems where an analytical result for nitrite is less than fifty percent (50%) of the MCL shall monitor at the frequency specified by the commissioner.

(3) For community, nontransient noncommunity, and transient noncommunity water systems, the repeat monitoring frequency for any water system shall be quarterly for at least one (1) year following any one (1) sample in which the concentration is greater than or equal to fifty percent (50%) of the MCL. The commissioner may allow a system to reduce the sampling frequency from quarterly to annually after determining the system is reliably and consistently less than the MCL.

(4) Systems which are monitoring annually shall take each subsequent sample during the quarter which previously resulted in the highest analytical result.

(h) Confirmation sampling shall be as follows:

(1) Where the results of sampling for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury,

selenium, or thallium indicate the MCL has been exceeded, the commissioner may require that one (1) additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two (2) weeks) at the same sampling point.

(2) Where nitrate or nitrite sampling results indicate the MCL has been exceeded, the system shall take a confirmation sample within twenty-four (24) hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the twenty-four (24) hour sampling requirement must immediately notify the consumers served by the public water system in accordance with section 15 of this rule. Systems exercising this option must take and analyze a confirmation sample within two (2) weeks of notification of the analytical results of the first sample.

(3) If a commissioner-required confirmation sample is taken for any contaminant, the results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with subsection (k). The commissioner has the discretion to delete results of obvious sampling errors.

(i) The commissioner may require more frequent monitoring than specified in subsections (d) through (g) or may require confirmation samples for positive and negative results.

(j) Systems may apply to the commissioner to conduct more frequent monitoring than the minimum monitoring frequencies specified in this section.

(k) Compliance with section 4 of this rule shall be determined based on the analytical results obtained at each sampling point in the following manner:

(1) For systems which are conducting monitoring at a frequency greater than annual, compliance with the MCLs for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium is determined by a running annual average at each sampling point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one (1) sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero (0) for the purpose of determining the annual average.

(2) For systems which are monitoring annually, or less frequently, the system is out of compliance with the MCLs for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commissioner, the determination of compliance will be based on the average of the two (2) samples.

(3) Compliance with the MCLs for nitrate and nitrite is determined based on one (1) sample if the levels of these contaminants are below the MCLs. If the levels of nitrate and/or nitrite exceed the MCLs in the initial sample, a confirmation sample is required in accordance with subsection (h)(2), and compliance shall be determined based upon the average of the initial and confirmation samples.

(4) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commissioner may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

(1) The frequency of monitoring conducted to determine compliance with the MCL for arsenic shall be as follows:

(1) Analyses for all community water systems utilizing surface water sources shall be sampled annually.

(2) Analyses for all community water systems utilizing only ground water sources shall be repeated at three (3) year intervals.

(3) The commissioner has the authority to determine compliance or initiate enforcement action based on analytical results.

(4) If the result of an analysis conducted as required in this section indicates that the results exceed the MCL as determined in section 4 of this rule, the supplier of water shall report to the state within seven (7) days and initiate three (3) additional analyses at the same sampling point within one (1) month.

(5) When the average of four (4) analyses made pursuant to this section, rounded to the same number of significant figures as the MCL for the arsenic, exceeds the MCL, the supplier of water shall notify the commissioner and give notice to the public under section 16 of this rule. Monitoring after public notification shall be at a frequency set by the commissioner and shall continue until the MCL has not been exceeded in two (2) consecutive samples or until a monitoring schedule as a condition to a variance, exemption, or enforcement action shall become effective.

(m) Each public water system shall monitor at the time designated by the commissioner during each compliance period.

(n) Sample collection for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium under this section shall be conducted using the sample preservation, container, and maximum holding time procedures specified in the following table:

<u>Contaminant</u>	<u>Preservative</u>	<u>Container</u> ¹	<u>Time</u> ²
Antimony	Conc HNO ₃ to pH <2	P or G	6 months
Asbestos	Cool, 4°C	P or G	48 hours ⁴
Barium	Conc HNO ₃ to pH <2	P or G	6 months
Beryllium	Conc HNO ₃ to pH <2	P or G	6 months

Cadmium	Conc HNO ₃ to pH <2	P or G	6 months
Chromium	Conc HNO ₃ to pH <2	P or G	6 months
Cyanide	Cool, 4° C, NaOH to pH>12 ³	P or G	14 days
Fluoride	none	P or G	1 month
Mercury	Conc HNO ₃ to pH <2	P or G	28 days
Nickel	Conc HNO ₃ to pH <2	P or G	6 months
Nitrate			
Chlorinated	Cool, 4° C	P or G	28 days
Nonchlorinated	Conc H ₂ SO ₄ to pH <2	P or G	14 days
Nitrite	Cool, 4° C	P or G	48 hours
Selenium	Conc HNO ₃ to pH <2	P or G	6 months
Thallium	Conc HNO ₃ to pH <2	P or G	6 months

¹P = Plastic, hard or soft; G = glass.

²In all cases, samples should be analyzed as soon after collection as possible.

³See method for information for preservation.

⁴Forty-eight (48) hours until processed for analysis.

(Water Pollution Control Board; 327 IAC 8-2-4.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1007; filed Aug 24, 1994, 8:15 a.m.: 18 IR 23; filed Aug 25, 1997, 8:00 a.m.: 21 IR 34)

327 IAC 8-2-4.2 Analytical methods for inorganic chemical testing

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 4.2. (a) Analyses conducted to determine compliance with section 4 of this rule shall be made in accordance with one (1) of the following methods for each contaminant:

(1) Antimony as follows:

- (A) Atomic absorption; furnace, Method 3113B*.
- (B) Atomic absorption; platform, Method 200.9*.
- (C) ICP-mass spectrometry, Method 200.8*.
- (D) Hydride-atomic absorption, Method D-3697-92*.

(2) Arsenic as follows:

- (A) Atomic absorption; furnace, Method D-2972-93C* or Method 3113B*.
- (B) Atomic absorption-gaseous hydride, Method D-2972-93B* or Method 3114B*.
- (C) Atomic absorption, platform, Method 200.9*.
- (D) Inductively coupled plasma technique, Method 200.7* or Method 3120B*.
- (E) ICP-mass spectrometry, Method 200.8*.

(3) Asbestos, transmission electron microscopy, Method 100.1* or Method 100.2*.

(4) Barium as follows:

- (A) Atomic absorption; furnace, Method 3113B*.
- (B) Atomic absorption; direct, Method 3111D*.
- (C) Inductively coupled plasma, Method 200.7* or Method 3120B*.
- (D) ICP-mass spectrometry, Method 200.8*.

(5) Beryllium as follows:

- (A) Atomic absorption; furnace, Method D-3645-93B or Method 3113B.
- (B) Atomic absorption; platform, Method 200.9*.
- (C) Inductively coupled plasma, Method 200.7* or Method 3120B*.
- (D) ICP-mass spectrometry, Method 200.8.

(6) Cadmium as follows:

- (A) Atomic absorption; furnace, Method 3113B*.
- (B) Inductively coupled plasma, Method 200.7*.
- (C) ICP-mass spectrometry, Method 200.8*.
- (D) Atomic absorption; platform, Method 200.9*.

(7) Chromium as follows:

- (A) Atomic absorption; furnace, Method 3113B*.
- (B) Inductively coupled plasma, Method 200.7* or Method 3120B*.
- (C) ICP-mass spectrometry, Method 200.8*.
- (D) Atomic absorption; platform, Method 200.9*.

(8) Cyanide as follows:

- (A) Manual distillation followed by:
 - (i) Spectrophotometric; amenable, Method D-2036-91B* or Method 4500-CN-G*.
 - (ii) Spectrophotometric; manual, Method D-2036-91A*, Method 4500-CN-E*, or Method I-3300-85*.
 - (iii) Spectrophotometric; semiautomated, Method 335.4*.
 - (iv) Method 4500-CN-C*.
- (B) Selective electrode, Method 4500-CN-F*.

(9) Fluoride as follows:

- (A) Ion chromatography, Method 300.0*, Method D-4327-91*, or Method 4110B*.
- (B) Manual distillation; color. SPADNS, Method 4500F-B,D*.
- (C) Manual electrode, Method D1179-93B* or Method 4500F-C*.
- (D) Automated electrode, Method 380-75WE*.
- (E) Automated alizarin, Method 4500F-E* or Method 129-71W*.

(10) Mercury as follows:

- (A) Manual cold vapor technique, Method 245.1, Method D3223-91*, or Method 3112B*.
- (B) Automated cold vapor technique, Method 245.2*.
- (C) ICP-mass spectrometry, Method 200.8*.

(11) Nickel as follows:

- (A) Atomic absorption; furnace, Method 3113B*.
- (B) Atomic absorption; platform, Method 200.9.
- (C) Atomic absorption; direct, Method 3111B*.
- (D) Inductively coupled plasma, Method 200.7* Method 3120B*.
- (E) ICP-mass spectrometry, Method 200.8*.

(12) Nitrate as follows:

- (A) Manual cadmium reduction, Method D3867-90B* or Method 4500-NO₃-E*.
- (B) Automated cadmium reduction, Method 353.2*, Method D3867-90A*, or Method 4500-NO₃-F*.
- (C) Ion selective electrode, Method 4500-NO₃-D* or Method 601*.
- (D) Ion chromatography, Method 300.0*, Method D4327-91*, Method 4110B*, or Method B-1011*.

(13) Nitrite as follows:

- (A) Ion chromatography, Method 300.0*, Method D4327-91*, Method 4110B*, or Method B-1011*.
- (B) Automated cadmium reduction, Method 353.2*, Method D3867-90A*, or Method 4500-NO₃-F*.
- (C) Manual cadmium reduction, Method D3867-90B* or Method 4500-NO₃-E*.
- (D) Spectrophotometric, Method 4500-NO₂-B*.

(14) Selenium as follows:

- (A) Hydride-atomic absorption, Method D3859-93A* or Method 3114B.
- (B) ICP-mass spectrophotometry, Method 200.8*.
- (C) Atomic adsorption; platform, Method 200.9*.
- (D) Atomic adsorption; furnace, Method D3859-93B* or Method 3113B*.

(15) Thallium as follows:

- (A) Atomic absorption; platform, Method 200.9*.
- (B) ICP-mass spectrometry, Method 200.8*.

(b) Analysis under this section shall only be conducted by laboratories that have been certified by EPA or the commissioner. Laboratories may conduct sample analyses under provisional certification until January 1, 1996. To receive certification to conduct analyses for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium, the laboratory must do the following:

- (1) Analyze performance evaluation samples which include those substances provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the commissioner.
- (2) Achieve quantitative results on the analyses that are within the following acceptance limits:

<u>Contaminant</u>	<u>Acceptance Limit</u>
Antimony	±30% at ≥0.006 mg/l

Arsenic	2 standard deviations based on study statistics
Asbestos	2 standard deviations based on study statistics
Barium	±15% at ≥0.15 mg/l
Beryllium	±15% at ≥0.001 mg/l
Cadmium	±20% at ≥0.002 mg/l
Chromium	±15% at ≥0.01 mg/l
Cyanide	±25% at ≥0.1 mg/l
Fluoride	±10% at ≥1 to 10 mg/l
Mercury	±30% at ≥0.0005 mg/l
Nickel	±15% at ≥0.01 mg/l
Nitrate	±10% at ≥0.4 mg/l
Nitrite	±15% at ≥0.4 mg/l
Selenium	±20% at ≥0.01 mg/l
Thallium	±30% at ≥0.002 mg/l

*Methods referenced in this section may be obtained as follows:

- (1) Method 245.2 may be obtained from the U.S. EPA, EMSL, Cincinnati, Ohio 45268. The identical methods were formerly in "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983, available at NTIS, PB84-128677.
- (2) Methods 200.8, 200.9, 200.7, and 245.1 may be found in "Methods for the Determination of Metals in Environmental Samples Supplement I", EPA-600/94-111, May 1994, available from NTIS, PB94-184942, 800-553-6847.
- (3) Methods D-3697-92, D-2972-93C, D-2972-93B, D-3645-93B, D2036-91B, D2036-91A, D4327-91, D1179-93B, D3223-91, D3867-90A, D3867-90B, D3859-93A, and D3859-93B, may be found in "Annual Book of ASTM Standards", 1994, Vols. 11.01 and 11.02, American Society for Testing and Materials, available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
- (4) Methods 3113B, 3120B, 3114B, 3111D, 4500-CN-C, 4500-CN-G, 4500-CN-E, 4500-CN-F, 4110B, 4500F-B,D, 4500F-C, 4500F-E, 3112B, 3111B, 4500-NO₃-F, d 4500-NO₃-D, 4500-NO₃-E, and 4500-NO₂-B may be found in "18th Edition of Standard Methods for the Examination of Water and Wastewater", 1992, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.
- (5) Method I-3300-85 may be found in Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225-0425.
- (6) Methods 335.4, 300.0, and 353.2 may be found in "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993, available from NTIS, PB94-121811.
- (7) Method 601 may be found in Technical Bulletin 601 "Standard Method of Test for Nitrate in Drinking Water", July 1994, PN 221890-001, Analytical Technology, Inc., available from ATI Orion, 529 Main Street, Boston, Massachusetts 02129.
- (8) Method B-1011 may be found in "Waters Test Method for Determination of Nitrate/Nitrite in Water Using Single Column Ion Chromatography", Millipore Corporation, Waters Chromatography Division, 34 Maple Street, Milford, Massachusetts 01757.
- (9) Method 100.1 may be found in "Analytical Methods for Determination of Asbestos Fibers in Water", EPA-600/4-83-043, EPA, September 1983, available from NTIS, PB83-260471.
- (10) Method 100.2 may be found in "Determination of Asbestos Structure Over 10-μm in Length in Drinking Water", EPA-600/R-94-134, June 1994, available from NTIS, PB94-201902.
- (11) Method 129-71W may be found in "Fluoride in Water and Wastewater", December 1972, Technicon Industrial Systems, available from Technicon Industrial Systems, Tarrytown, New York 10591.
- (12) Method 380-75WE may be found in "Fluoride in Water and Wastewater", February 1976, Technicon Industrial Systems, available from Technicon Industrial Systems, Tarrytown, New York 10591.

These methods are also available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, N1254, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-4.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1008; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 29; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 40*)

327 IAC 8-2-5 Organic chemicals other than volatile compounds; maximum contaminant levels

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5. (a) The MCLs for the following synthetic organic chemicals apply to all community water systems and nontransient noncommunity water systems, except as provided in subsection (c) for total trihalomethanes:

<u>Contaminant</u>	<u>Level in Milligrams Per Liter</u>
Total trihalomethanes (the sum of the concentrations of bromodichloromethane, dibromochloromethane,	0.10

tribromomethane (bromoform), and trichloromethane (chloroform))

	<u>CAS No.</u>	<u>Contaminant</u>	<u>MCL (mg/l)</u>
15972-60-8	Alachlor	0.002	
1912-24-9	Atrazine	0.003	
50-32-8	Benzo[a]pyrene	0.0002	
1563-66-2	Carbofuran	0.04	
57-74-9	Chlordane	0.002	
75-99-0	Dalapon	0.2	
96-12-8	1,2-dibromo-3-chloropropane (DBCP)	0.0002	
103-23-1	Di(2-ethylhexyl)adipate	0.4	
117-81-7	Di(2-ethylhexyl)phthalate	0.006	
88-85-7	Dinoseb	0.007	
85-00-7	Diquat	0.02	
94-75-7	2,4-D	0.07	
145-73-3	Endothall	0.1	
72-20-8	Endrin	0.002	
106-93-4	Ethylene dibromide	0.00005	
1071-53-6	Glyphosate	0.7	
76-44-8	Heptachlor	0.0004	
1024-57-3	Heptachlor epoxide	0.0002	
118-74-1	Hexachlorobenzene	0.001	
77-47-4	Hexachlorocyclopentadiene	0.05	
58-89-9	Lindane	0.0002	
72-43-5	Methoxychlor	0.04	
23135-22-0	Oxamyl (vydate)	0.2	
1918-02-1	Picloram	0.5	
1336-36-3	Polychlorinated biphenyls	0.0005	
87-86-5	Pentachlorophenol	0.001	
122-34-9	Simazine	0.004	
8001-35-2	Toxaphene	0.003	
1746-01-6	2,3,7,8-TCDD (dioxin)	3×10^{-8}	
93-72-1	2,4,5-TP	0.05	

(b) For the synthetic organic chemicals listed in this section other than total trihalomethanes, monitoring frequency is specified in section 5.1 of this rule, and analytical methods are specified in section 5.2 of this rule.

(c) The MCL for total trihalomethanes listed in this section applies only to community water systems which serve a population of ten thousand (10,000) or more individuals and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process. Compliance with the MCL for total trihalomethanes is calculated under section 5.3 of this rule.

(d) The commissioner hereby identifies, as indicated in the following table, granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) as the best technology, treatment technique, or other means available for achieving compliance with the MCL for synthetic organic contaminants identified in subsection (a):

BAT for Synthetic Organic Contaminants
Listed in Subsection (a)

<u>CAS No.</u>	<u>Contaminant</u>	<u>GAC</u>	<u>PTA</u>	<u>OX</u>
15972-60-8	Alachlor	X		
1912-24-9	Atrazine	X		
50-32-8	Benzo[a]pyrene	X		
1563-66-2	Carbofuran	X		
57-74-9	Chlordane	X		
94-75-7	2,4-D	X		
75-99-0	Dalapon	X		
96-12-8	1,2-dibromo-3-chloropropane (DBCP)	X	X	
103-23-1	Di(2-ethylhexyl)adipate	X	X	
117-81-7	Di(2-ethylhexyl)phthalate	X		
88-85-7	Dinoseb	X		
85-00-7	Diquat	X		
145-73-3	Endothall	X		
72-20-8	Endrin	X		
106-93-4	Ethylene dibromide (EDB)	X	X	
1071-53-6	Glyphosate			X
76-44-8	Heptachlor	X		
1024-57-3	Heptachlor epoxide	X		
118-74-1	Hexachlorobenzene	X		
77-47-3	Hexachlorocyclopentadiene	X	X	
58-89-9	Lindane	X		
72-43-5	Methoxychlor	X		
23135-22-0	Oxamyl (vydate)	X		

1918-02-1	Picloram	X	
1336-36-3	Polychlorinated biphenyls (PCBs)	X	
87-86-5	Pentachlorophenol	X	
93-72-1	2,4,5-TP (silvex)	X	
122-34-9	Simazine	X	
1746-01-6	2,3,7,8-TCDD (dioxin)	X	
8001-35-2	Toxaphene	X	X

(Water Pollution Control Board; 327 IAC 8-2-5; filed Sep 24, 1987, 3:00 p.m.: 11 IR 706; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1009; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 32; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 43)

327 IAC 8-2-5.1 Collection of samples for organic chemical testing other than volatile organic compounds and total trihalomethanes

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.1. (a) To determine compliance with section 5(a) of this rule, collection of samples for organic chemical testing, other than volatile organic compounds and total trihalomethanes, shall be made as follows:

(1) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(2) Surface water systems, including those systems with a combination of surface and ground sources, shall take a minimum of one (1) sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(3) If the system draws water from more than one (1) source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions such as when water representative of all sources is being used.

(4) The monitoring frequency is as follows:

(A) Each community and nontransient noncommunity water system shall take four (4) consecutive quarterly samples for each contaminant listed in section 5(a) of this rule during each compliance period beginning with the initial compliance period.

(B) Systems serving more than three thousand three hundred (3,300) persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two (2) quarterly samples in one (1) year during each repeat compliance period.

(C) Systems serving less than or equal to three thousand three hundred (3,300) persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one (1) sample during each repeat compliance period.

(5) Each community and nontransient noncommunity water system may apply to the commissioner for a waiver from the requirement of subdivision (4). A system must reapply for a waiver for each compliance period.

(6) The commissioner may grant a waiver after evaluating the knowledge of previous use, including transport, storage, or disposal of the contaminant within the watershed or zone of influence of the system. If a determination by the commissioner reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(A) Previous analytical results.

(B) The proximity of the system to a potential point or nonpoint source of contamination. (Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses).

(C) The environmental persistence and transport of the pesticide or polychlorinated biphenyls (PCBs).

(D) How well the water source is protected against contamination due to such factors as:

(i) depth of the well;

(ii) the type of soil; and

(iii) the integrity of the well casing.

(E) Elevated nitrate levels at the water supply source.

(F) Use of PCBs in equipment used in the production, storage, or distribution of water, including, but not limited to, PCBs used in pumps or transformers.

(7) If an organic contaminant listed in section 5(a) of this rule is detected as defined by subdivision (16), in any sample, then the monitoring requirements are as follows:

- (A) Each system must monitor quarterly at each sampling point which resulted in a detection.
- (B) The commissioner may decrease the quarterly monitoring requirement specified in clause (A) provided it has determined that the system is reliably and consistently below the MCL. In no case shall the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface water system takes a minimum of four (4) quarterly samples.
- (C) After the commissioner determines the system is reliably and consistently below the MCL, the commissioner may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.
- (D) Systems which have three (3) consecutive annual samples with no detection of contaminant may apply to the commissioner for a waiver as specified in subdivision (6).
- (E) If monitoring results in detection of one (1) or more of certain related contaminants (aldicarb, aldicarb sulfoxide, aldicarb sulfone, heptachlor, and heptachlor epoxide), then subsequent monitoring shall include analyses for all related contaminants.
- (8) Systems which violate the requirements of section 5(a) of this rule as determined by subdivision (11) must monitor quarterly. After a minimum of four (4) quarterly samples shows the system is in compliance and the commissioner determines the system is reliably and consistently below the MCL, as specified in subdivision (11), the system shall monitor at the frequency specified in subdivision (7)(C).
- (9) The commissioner may require a confirmation sample for positive or negative results. If a confirmation sample is required by the commissioner, the result must be averaged with the first sampling result and the average used for the compliance determination as specified in subdivision (11). The commissioner has the discretion to delete results of obvious sampling errors from this calculation.
- (10) The commissioner may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five (5) sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth ($\frac{1}{5}$) of the MCL. Compositing of samples must be done in the laboratory and analyzed within fourteen (14) days of sample collection.
- (A) When a composite sample is analyzed, if the concentration in the composite sample detects one (1) or more contaminants listed in section 5(a) of this rule, then a follow-up sample must be analyzed within fourteen (14) days from each sampling point included in the composite and analyzed for that contaminant.
- (B) Duplicate samples must be collected from each sampling point when composite samples will be analyzed. If a contaminant is detected, the duplicate must be analyzed and the results reported to the commissioner within fourteen (14) days of collection.
- (C) If the population served by the system is greater than three thousand three hundred (3,300) persons, then compositing may only be permitted by the commissioner at sampling points within a single system. In systems serving less than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.
- (11) Compliance with section 5(a) of this rule shall be determined based on the analytical results obtained at each sampling point in the following manner:
- (A) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be calculated as zero (0) for purposes of determining the annual average.
- (B) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commissioner, the determination of compliance will be based on the average of two (2) samples.
- (C) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commissioner may allow the system to give public notice to only that portion of the system which is out of compliance.
- (12) If monitoring data collected after January 1, 1990, are generally consistent with the requirements of this section and section 5.2 of this rule, then the commissioner may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period.
- (13) The commissioner may increase the required monitoring frequency, where necessary, to detect variations within the system such as fluctuations in concentration due to seasonal use and changes in water source.
- (14) The commissioner has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by the commissioner's sanctioned representatives or agencies, or both.
- (15) Each public water system shall monitor at the time designated by the commissioner within each compliance period.
- (16) Method detection levels for contaminants listed in section 5(a) of this rule are as follows:

<u>Contaminant</u>	<u>Detection Limit (mg/l)</u>
Alachlor	0.0002

Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
1,2-dibromo-3-chloropropane (DBCP)	0.00002
Di(2-ethylhexyl)adipate	0.0006
Di(2-ethylhexyl)phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (dioxin)	0.000000005
2,4,5-TP (silvex)	0.0002

(b) If the result of an analysis made under subsection (a) indicates that the level of any contaminant listed in section 5 of this rule exceeds the MCL, the supplier of water shall report to the commissioner within seven (7) days and initiate three (3) additional analyses within one (1) month.

(c) When the average of four (4) analyses made under subsection (b) rounded to the same number of significant figures as the MCL for the substance in question exceeds the MCL, the supplier of water shall report to the commissioner under section 13 of this rule and shall give notice to the public under section 15 of this rule. Monitoring after public notification shall be at a frequency designated by the commissioner and shall continue until the MCL has not been exceeded in two (2) successive samples or until a monitoring schedule as a condition to a variance or enforcement action shall become effective. (*Water Pollution Control Board; 327 IAC 8-2-5.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1010; filed Aug 24, 1994, 8:15 a.m.: 18 IR 33; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 44*)

327 IAC 8-2-5.2 Analytical methods for organic chemical testing other than volatile organic compounds and total trihalomethanes

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.2. (a) Analysis for the contaminants listed in section 5(a) of this rule shall be conducted using the following EPA methods or their equivalent as approved by EPA established as follows:

- (1) Dioxin, as described in Method 1613*.
- (2) 2,4-D, as described in Method 515.2*, Method 555*, or Method 515.1*.
- (3) 2,4,5-TP (silvex), as described in Method 515.2*, Method 555*, or Method 515.1*.
- (4) Alachlor, as described in Method 505*, Method 507*, Method 525.2*, or Method 508.1*.
- (5) Atrazine, as described in Method 505*, Method 507*, Method 525.1*, or Method 508.1*.
- (6) Benzo(a)pyrene, as described in Method 525.2*, Method 550*, or Method 550.1*.
- (7) Carbofuran, as described in Method 531.1* or Method 6610*.
- (8) Chlordane, as described in Method 505*, Method 508*, Method 525.2*, or Method 508.1*.
- (9) Dalapon, as described in Method 552.1* or Method 515.1*.
- (10) Di(2-ethylhexyl)adipate, as described in Method 506* or Method 525.2*.
- (11) Di(2-ethylhexyl)phthalate, as described in Method 506* or Method 525.2*.
- (12) 1,2-dibromo-3-chloropropane (DBCP), as described in Method 504.1* or Method 551*.
- (13) Dinoseb, as described in Method 515.2*, Method 555*, or Method 515.1*.
- (14) Diquat, as described in Method 549.1*.

- (15) Endothall, as described in Method 548.1*.
- (16) Endrin, as described in Method 505*, Method 508*, Method 525.2*, or Method 508.1*.
- (17) Ethylene dibromide (EDB), as described in Method 504.1* or Method 551*.
- (18) Glyphosate, as described in Method 547* or Method 6651*.
- (19) Heptachlor, as described in Method 505*, Method 508*, Method 525.2*, or Method 508.1*.
- (20) Heptachlor epoxide, as described in Method 505*, Method 508*, Method 525.2*, or Method 508.1*.
- (21) Hexachlorobenzene, as described in Method 505*, Method 508*, Method 525.2*, or Method 508.1*.
- (22) Hexachlorocyclopentadiene, as described in Method 505*, Method 508*, Method 525.2*, or Method 508.1*.
- (23) Lindane, as described in Method 505*, Method 508*, Method 525.1*, or Method 508.1*.
- (24) Methoxychlor, as described in Method 505*, Method 508*, Method 525.1, or Method 508.1.
- (25) Oxyaryl, as described in Method 531.1* or Method 6610*.
- (26) PCBs:

(A) as decachlorobiphenyl, as described in Method 508A*; or

(B) as arochlors, as described in Method 505* or Method 508*.

(27) Pentachlorophenol, as described in Method 515.2*, Method 525.2*, Method 555*, or Method 515.1*.

(28) Picloram, as described in Method 515.2*, Method 555*, or Method 515.1*.

(29) Simazine, as described in Method 505*, Method 507*, Method 525.2*, or Method 508.1*.

(30) Toxaphene, as described in Method 505*, Method 508*, or Method 525.2*.

(b) Analysis for PCBs shall be conducted as follows:

(1) Each system which monitors for PCBs shall analyze each sample using either Method 505* or Method 508* (see subsection (a)).

(2) If PCBs (as one (1) of seven (7) arochlors) are detected, as designated as follows, in any sample analyzed using Method 505* or Method 508*, the system shall reanalyze the sample using Method 508A* to quantitate PCBs (as decachlorobiphenyl):

<u>Arochlor</u>	<u>Detection Limit (mg/l)</u>
1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

(3) Compliance with the PCB maximum contaminant level shall be determined based upon the quantitative results of analyses using Method 508A*.

(c) Analysis under this section shall only be conducted by laboratories that have received certification by EPA or the commissioner and have met the following conditions:

(1) To receive certification to conduct analyses for the contaminants in section 5(a) of this rule, the laboratory must analyze performance evaluation samples which include those substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the commissioner.

(2) Achieve quantitative results on the analyses that are within the following acceptance limits:

<u>Contaminant</u>	<u>Acceptance Limits (Percent)</u>
DBCP	±40
EDB	±40
Alachlor	±45
Atrazine	±45
Benzo(a)pyrene	2 standard deviations
Carbofuran	±45
Chlordane	±45
Dalapon	2 standard deviations
Di(2-ethylhexyl)adipate	2 standard deviations
Di(2-ethylhexyl)phthalate	2 standard deviations
Dinoseb	2 standard deviations
Diquat	2 standard deviations
Endothall	2 standard deviations
Endrin	±30
Glyphosate	2 standard deviations

Heptachlor	±45
Heptachlor epoxide	±45
Hexachlorobenzene	2 standard deviations
Hexachlorocyclopentadiene	2 standard deviations
Lindane	±45
Methoxychlor	±45
Oxamyl	2 standard deviations
PCBs (as decachlorobiphenyl)	0-200
Picloram	2 standard deviations
Simazine	2 standard deviations
Toxaphene	±45
Pentachlorophenol	±50
2,3,7,8-TCDD (dioxin)	2 standard deviations
2,4-D	±50
2,4,5-TP (silvex)	±50

*The methods referenced in this section may be obtained as follows:

(1) Method 508A may be found in "Methods for the Determination of Organic Compounds in Drinking Water", EPA-600/4-88-039, December 1988, revised July 1991, available from NTIS, PB91-231480, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(2) Methods 506, 547, 550, 550.1, and 551 may be found in "Method for the Determination of Organic Compounds in Drinking Water Supplement I", EPA-600-4-90-020, July 1990, available from NTIS, PB91-146027, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(3) Methods 548.1, 549.1, and 552.1 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement II", EPA-600/R-92-129, August 1992, available from NTIS, PB92-207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(4) Methods 505, 507, 508, 515.1, 515.2, 531.1, and 555 may be found in "Technical Notes on Drinking Water Methods", October 1994, EPA-600/R-94-173, available from NTIS, PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(5) Method 1613 may be found in "Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS", EPA 821-B-94-005, October 1994, available from NTIS, PB95-104774, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(6) Method 6651 may be found in "18th Edition of Standard Methods for the Examination of Water and Wastewater", 1992, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

(7) Method 6610 may be found in "Supplement to the 18th Edition of Standard Methods for Water and Wastewater", 1994, American Public Health Association, available from the National Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

(8) Methods 504.1, 508.1, and 525.2 are available from U.S. EPA EMSL, Cincinnati, Ohio 45268; the phone number is (513) 569-7586.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, Room 1254, Indianapolis, Indiana 46204. (*Water Pollution Control Board; 327 IAC 8-2-5.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1011; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 35; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 46*)

327 IAC 8-2-5.3 Collection of samples for total trihalomethanes testing; community water systems

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 5.3. (a) To determine compliance with section 5 of this rule, each community water system which serves ten thousand (10,000) or more individuals and which adds a disinfectant (oxidant) to the water in any part of the drinking water treatment process shall collect and analyze samples for total trihalomethanes (TTHM) in accordance with this section. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the commissioner's approval, be considered one (1) treatment plant for determining the minimum number of samples. All samples taken within an established frequency shall be collected within a twenty-four (24) hour period.

(b) The requirements of subsection (a) apply as follows:

(1) Community water systems which utilize surface water sources in whole or in part, and community water systems which utilize only ground water sources and which have not been determined by the commissioner to qualify for the monitoring requirements of subsection (c) shall analyze for TTHM at quarterly intervals on at least four (4) water samples for each treatment plant used by the

system. At least twenty-five percent (25%) of the samples shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining seventy-five percent (75%) shall be taken at representative locations in the distribution system, taking into account number of persons served, different sources of water, and different treatment methods employed. The results of all analyses per quarter shall be arithmetically averaged and reported to the commissioner within thirty (30) days of the system's receipt of such results. All samples collected shall be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in subsection (e).

(2) Upon the written request of a community water system, the monitoring frequency required by subdivision (1) may be reduced by the commissioner to a minimum of one (1) sample analyzed for TTHM per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system. Upon a written determination by the commissioner that the data from at least one (1) year of monitoring in accordance with subdivision (1) and local conditions demonstrate that TTHM concentrations will be consistently below the MCL.

(3) If, at any time during which the reduced monitoring frequency prescribed under this section applies, the results from any analysis exceed ten-hundredths (0.10) milligram per liter of TTHM and such results are confirmed by at least one (1) check sample taken promptly after such results are received, or if the system makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of subdivision (1) which monitoring shall continue for at least one (1) year before the frequency may be reduced again. At the discretion of the commissioner, a system's monitoring frequency shall be increased above the minimum in those cases where it is necessary to detect variations of TTHM levels within the distribution system.

(c) Monitoring frequency required by this section may only be reduced as follows:

(1) Upon written request to the commissioner, a community water system utilizing only ground water sources may seek to have the monitoring frequency required by subsection (a) reduced to a minimum of one (1) sample for maximum TTHM potential per year for each treatment plant used by the system taken at a point in the distribution system reflecting maximum residence time of the water in the system. The system shall submit, to the commissioner, the results of at least one (1) sample analyzed for maximum TTHM potential using the procedure specified in subsection (g). A sample must be analyzed from each treatment plant used by the system and be taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the commissioner that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than ten-hundredths (0.10) milligram per liter and that, based upon an assessment of the local condition of the system, the system is not likely to approach or exceed the MCL for total TTHMs. The results of all analyses shall be reported to the commissioner within thirty (30) days of the system's receipt of such results. All samples collected shall be used for determining whether the system must comply with the monitoring requirements of subsection (a) unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in subsection (e).

(2) If, at any time during which the reduced monitoring frequency prescribed under subdivision (1) applies, the results from any analysis taken by the system for maximum TTHM potential are equal to or greater than ten-hundredths (0.10) milligram per liter, and such results are confirmed by at least one (1) check sample taken promptly after such results are received, the system shall immediately begin monitoring in accordance with the requirements of subsection (b) and such monitoring shall continue for at least one (1) year before the frequency may be reduced again. In the event of any significant change to the system's source of water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential taken at a point in the distribution system reflecting maximum residence time of the water in the system for the purpose of determining whether the system must comply with monitoring requirements of subsection (b). At the discretion of the commissioner, monitoring frequencies may and should be increased above the minimum in those cases where this is necessary to detect variation of TTHM levels within the distribution system.

(d) Compliance with section 5 of this rule for TTHM shall be determined based on a running annual average of quarterly samples collected by the system as prescribed in subsection (b)(1) or (b)(2). If the average of samples covering any four (4) consecutive quarterly periods exceeds the MCL, the supplier of water shall report to the commissioner under section 13 of this rule and notify the public under section 15 of this rule. Monitoring after public notification shall be at a frequency designated by the commissioner and shall continue until a monitoring schedule as a condition to a variance, exemption, or enforcement action shall become effective.

(e) Samples for TTHM shall be dechlorinated upon collection to prevent further production of trihalomethanes according to the procedures described in the methods, except acidification is not required if only TTHMs or THMs are to be determined. Samples for maximum TTHM potential should not be dechlorinated and should be held for seven (7) days at twenty-five degrees Celsius (25°C) or above prior to analysis. Analyses made under this section shall be conducted by one (1) of the following U.S. EPA approved methods:

- (1) Method 502.2*.
- (2) Method 524.2*.
- (3) Method 551*.

(f) Before a community water system makes any significant modifications to its existing treatment process for the purpose of achieving

compliance with the MCL established in section 5(a) of this rule, such system must submit and obtain the commissioner's approval of a detailed plan setting forth its proposed modification and those safeguards that it will implement to ensure that the bacteriological quality of the drinking water served by such system will not be adversely affected by such modification. Each system shall comply with the provisions set forth in the approved plan. At a minimum, a plan approved by the commissioner shall require the system modifying its disinfection practice to do the following:

- (1) Evaluate the water system for sanitary defects and evaluate the source water for biological quality.
- (2) Evaluate its existing treatment practices and consider improvements that will minimize disinfectant demand and optimize finished water quality throughout the distribution system.
- (3) Provide baseline water quality survey data of the distribution system. Such data should include the results from monitoring for coliform and fecal coliform bacterial, fecal streptococci, standard plate counts at thirty-five degrees Celsius (35°C) and twenty degrees Celsius (20°C), phosphate, ammonia nitrogen, and total organic carbon. Virus studies should be required where source waters are heavily contaminated with sewage effluent.
- (4) Conduct additional monitoring to assure continued maintenance of optimal biological quality in finished water, for example, when chloramines are introduced as disinfectants or when prechlorination is being discontinued. Additional monitoring may also be required by the commissioner for chlorate, chlorite, and chlorine dioxide when chlorine dioxide is used. Standard plate count analysis may also be required by the commissioner as appropriate before and after any modifications.
- (5) Consider inclusion in the plan provisions to maintain an active disinfectant residual throughout the distribution system at all times during and after modification.
- (g) The water sample for determination of maximum trihalomethane potential is taken from a point in the distribution system that reflects maximum residence time. Procedures for sample collection and handling are given in the methods. No reducing agent is added to quench the chemical reaction producing THMs at the time of sample collection. The intent is to permit the levels of THM precursors to be depleted and the concentration of THMs to be maximized for the supply to be tested. Four (4) experimental parameters affecting maximum THM production are pH, temperature, reaction time, and the presence of a disinfectant residual. These parameters are dealt with as follows:

- (1) Measure the disinfectant residual at the selected sampling point. Proceed only if a measurable disinfectant residual is present.
- (2) Collect triplicate forty (40) milliliter water samples at the pH prevailing at the time of sampling and prepare a method blank according to the methods.
- (3) Seal and store these samples together for seven (7) days at twenty-five degrees Celsius (25°C) or above.
- (4) After this time period, open one (1) of the sample containers and check for disinfectant residual. Absence of a disinfectant residual invalidates the sample for further analysis. Once a disinfectant residual has been demonstrated, open another of the sealed samples and determine total THM concentration using a method specified in subsection (e).

*The methods referenced in this section may be obtained as follows:

- (1) Method 502.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water", EPA-600/4-88-039, December 1988, revised July 1991, available from NTIS, PB91-231480, U.S. Department [sic.] of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.
- (2) Method 551 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement I", EPA-600-4-90-020, July 1990, available from NTIS, PB91-146027, U.S. Department [sic.] of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.
- (3) Method 524.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement II", EPA-600/R-92-129, August 1992, available from NTIS, PB92-207703, U.S. Department [sic.] of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, N1254, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-5.3; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1011; filed Aug 24, 1994, 8:15 a.m.: 18 IR 37; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 49*)

327 IAC 8-2-5.4 Volatile organic compounds; maximum contaminant levels for community water systems and nontransient noncommunity water systems

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 5.4. (a) The following MCLs for volatile organic compounds (VOCs) apply to community water systems and nontransient noncommunity water systems:

<u>CAS No.</u>	<u>Contaminant</u>	<u>Level in</u> <u>Milligrams Per Liter</u>
71-43-2	Benzene	0.005

75-01-4	Vinyl chloride	0.002
56-23-5	Carbon tetrachloride	0.005
107-06-2	1,2-dichloroethane	0.005
79-01-6	Trichloroethylene	0.005
75-35-4	1,1-dichloroethylene	0.007
71-55-6	1,1,1-trichloroethane	0.2
106-46-7	para-dichlorobenzene	0.075
156-59-2	cis-1,2-dichloroethylene	0.07
78-87-5	1,2-dichloropropane	0.005
100-41-4	Ethylbenzene	0.7
108-90-7	Monochlorobenzene	0.1
95-50-1	ortho-dichlorobenzene	0.6
100-42-5	Styrene	0.1
127-18-4	Tetrachloroethylene	0.005
108-88-3	Toluene	1
156-60-5	trans-1,2-dichloroethylene	0.1
1330-20-7	Xylenes (total)	10
75-09-2	Dichloromethane	0.005
120-82-1	1,2,4-trichlorobenzene	0.07
79-00-5	1,1,2-trichloroethane	0.005

(b) BAT for achieving compliance with the MCL for the volatile organic compounds listed in subsection (a) is:

- (1) central treatment using packed tower aeration except toluene;
- (2) central treatment using granular activated carbon for each chemical except vinyl chloride and dichloromethane; or
- (3) other means available for achieving compliance with the maximum contaminant levels identified in subsection (a).

(c) Monitoring frequency and compliance with MCLs for VOCs are determined under section 5.5 of this rule. (*Water Pollution Control Board; 327 IAC 8-2-5.4; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1013; filed Aug 24, 1994, 8:15 a.m.: 18 IR 39*)

327 IAC 8-2-5.5 Collection of samples for volatile organic compound testing other than total trihalomethanes; community and nontransient noncommunity water systems

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.5. (a) Community water systems and nontransient noncommunity water systems shall collect samples for volatile organic compound testing in order to determine compliance with section 5.4 of this rule, beginning with the initial compliance period, as follows:

- (1) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point, unless conditions make another sampling point more representative of each source or treatment plant, or within the distribution system.
- (2) Surface water systems (or combined surface/ground) shall take a minimum of one (1) sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point, unless conditions make another sampling point more representative of each source or treatment plant, or within the distribution system.
- (3) If the system draws water from more than one (1) source and sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions such as when water representative of all sources is being used.
- (4) Each community and nontransient noncommunity water system shall take four (4) consecutive quarterly samples for each contaminant listed in section 5.4 of this rule, except vinyl chloride, during each compliance period, beginning in the initial compliance period.
- (5) If the initial monitoring for contaminants listed in section 5.4 of this rule, as allowed by subsection (b), has been completed by December 31, 1992, and the system did not detect any contaminant listed in section 5.4 of this rule, then each ground and surface water system shall take one (1) sample annually beginning with the initial compliance period.
- (6) After a minimum of three (3) years of annual sampling, the commissioner may allow ground water systems with no previous detection of any contaminant listed in section 5.4 of this rule to take one (1) sample during each compliance period.
- (7) Each community and nontransient noncommunity ground water system which does not detect a contaminant listed in section 5.4 of this rule may apply to the commissioner for a waiver from the requirements of subdivisions (5) and (6) after completing the initial monitoring. As used in this section, "detection" means greater than or equal to five ten-thousandths (0.0005) milligram per liter. A waiver shall be effective for no more than six (6) years (two (2) compliance periods). The commissioner may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene.
- (8) The commissioner may grant a waiver after evaluating the following factors:

(A) Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the commissioner reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.

(B) If previous use of the contaminant is unknown or if the contaminant has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(i) Previous analytical results.

(ii) The proximity of the system to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.

(iii) The environmental persistence and transport of the contaminants.

(iv) The number of persons served by the public water system, and the proximity of a smaller system to a larger system.

(v) How well the water source is protected against contamination, such as whether it is a surface or ground water system. Ground water systems must consider factors such as the depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.

(9) As a condition of the waiver, a ground water system must take one (1) sample at each sampling point during the time the waiver is effective, for example, one (1) sample during two (2) compliance periods or six (6) years, and update its vulnerability assessment considering the factors listed in subdivision (8). Based on this vulnerability assessment, the commissioner must reconfirm that the system is nonvulnerable. If the commissioner does not make this reconfirmation within three (3) years of the initial determination, then the waiver is invalidated and the system is required to sample annually as specified in subdivision (5).

(10) Each community and nontransient noncommunity surface water system which does not detect a contaminant listed in section 5.4 of this rule may apply to the commissioner for a waiver from the requirements of subdivision (5) after completing the initial monitoring. Composite samples from a maximum of five (5) sampling points are allowed provided that the detection limit of the method used for analysis is less than one-fifth (1/5) of the MCL. Systems meeting this criterion must be determined by the commissioner to be nonvulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the commissioner (if any).

(11) If a contaminant listed in section 5.4 of this rule, except vinyl chloride, is detected at a level exceeding five ten-thousandths (0.0005) milligram per liter in any sample, then the monitoring requirements will be as follows:

(A) The system must monitor quarterly at each sampling point which resulted in a detection.

(B) The commissioner may decrease the quarterly monitoring requirement specified in clause (A) provided it has determined that the system is reliably and consistently below the MCL. In no case shall the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface water system takes a minimum of four (4) quarterly samples.

(C) If the commissioner determines that the system is reliably and consistently below the MCL, the commissioner may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter or quarters which previously yielded the highest analytical result.

(D) Systems which have three (3) consecutive annual samples with no detection of a contaminant may apply to the commissioner for a waiver as specified in subdivision (7).

(E) Ground systems which have detected one (1) or more two-carbon organic compounds:

(i) trichloroethylene;

(ii) tetrachloroethylene;

(iii) 1,2-dichloroethane;

(iv) 1,1,1-trichloroethane;

(v) cis-1,2-dichloroethylene;

(vi) trans-1,2-dichloroethylene; or

(vii) 1,1-dichloroethylene;

shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one (1) or more of the two-carbon organic compounds was detected. If the results of the first analysis do not detect vinyl chloride, the commissioner may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one (1) sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the commissioner.

(12) Systems which violate the requirements of section 5.4 of this rule, as determined by subdivision (15), must monitor quarterly. After a minimum of four (4) consecutive quarterly samples which show the system is in compliance as specified in subdivision (15) if the commissioner determines that the system is reliably and consistently below the MCL, the system may monitor at the frequency and times specified in subdivision (11)(C).

(13) The commissioner may require a confirmation sample for positive or negative results. If a confirmation sample is required by the commissioner, the result must be averaged with the first sampling result and the average is used for the compliance determination.

as specified by subdivision (15). The commissioner has the discretion to delete results of obvious sampling errors from this calculation. (14) The commissioner may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five (5) sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth (1/5) of the MCL. Compositing of samples must be done in the laboratory and analyzed within fourteen (14) days of sample collection.

(A) If the concentration in the composite sample is greater than or equal to five ten-thousandths (0.0005) milligram per liter for any contaminant listed in section 5.4 of this rule, then a follow-up sample must be analyzed within fourteen (14) days from each sampling point included in the composite, and be analyzed for that contaminant.

(B) If a duplicate of the original sample taken from each sampling point used in the composite is available, the system may use the duplicate instead of resampling. The duplicate must be analyzed and the results reported to the commissioner within fourteen (14) days of collection.

(C) Compositing may only be permitted by the commissioner at sampling points within a single system if the population served by the system is greater than three thousand three hundred (3,300) persons. In systems serving less than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.

(D) Compositing of samples prior to gas chromatography (GC) analysis shall be as follows:

(i) Add five (5) milliliters or equal larger amounts of each sample (up to five (5) samples are allowed) to a twenty-five (25) milliliter glass syringe. Special precautions must be made to maintain zero (0) headspace in the syringe.

(ii) The samples must be cooled at four degrees Celsius (4°C) during this step to minimize volatilization losses.

(iii) Mix well and draw out a five (5) milliliter aliquot for analysis.

(iv) Follow sample introduction, purging, and desorption steps described in the method.

(v) If less than five (5) samples are used for compositing, a proportionately smaller syringe may be used.

(E) Compositing of samples prior to gas chromatography/mass spectrometry (GS/MS) analysis shall be as follows:

(i) Inject five (5) milliliters or larger amounts of each aqueous solution (up to five (5) samples are allowed) into a twenty-five (25) milliliter purging device using the sample introduction technique described in the method.

(ii) The total volume of the sample in the purging device must be twenty-five (25) milliliters.

(iii) Purge and desorb as described in the method.

(15) Compliance with section 5.4 of this rule shall be determined based on the analytical results obtained at each sampling point using the following criteria:

(A) For systems which are conducting monitoring at a frequency greater than annually, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately.

(B) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commissioner, the determination of compliance will be based on the average of two (2) samples.

(C) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commissioner may allow the system to give public notice to only that area served by that portion of the system which is out of compliance.

(b) The commissioner may allow the use of monitoring data collected after January 1, 1988, for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements of this section, the commissioner may use these data (a single sample rather than four (4) quarterly samples) to satisfy the initial monitoring requirement of subsection (a)(4). Systems which use grandfathered samples and do not detect any contaminant listed in section 5.4 of this rule, except vinyl chloride, shall begin monitoring annually in accordance with subsection (a)(5), beginning with the initial compliance period.

(c) The commissioner may increase required monitoring where necessary to detect variations within the system.

(d) Each certified laboratory must determine the method detection limit, as defined in Appendix B of 40 CFR 136 (July 1, 1991), at which it is capable of detecting volatile organic compounds. The acceptable method detection limit is five ten-thousandths (0.0005) milligram per liter. This concentration is the detection concentration for purposes of this section.

(e) Each public water system shall monitor at the time designated by the commissioner within each compliance period.

(f) The commissioner may increase required monitoring where necessary to detect variations within the system.

(g) The commissioner has the authority to determine compliance or initiate enforcement based upon analytical results or other information. (*Water Pollution Control Board; 327 IAC 8-2-5.5; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1014; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 39; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 936*)

327 IAC 8-2-5.6 Analytical methods for volatile organic compounds

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.6. (a) Analysis for the contaminants listed in section 5.5 of this rule shall be conducted using the following U.S. EPA methods or their equivalent as approved by EPA:

- (1) Benzene, as described in Method 502.2* or Method 524.2*.
- (2) Carbon tetrachloride, as described in Method 502.2*, Method 524.2*, or Method 551*.
- (3) Chlorobenzene, as described in Method 502.2* or Method 524.2*.
- (4) 1,2-dichlorobenzene, as described in Method 502.2* or Method 524.2*.
- (5) 1,4-dichlorobenzene, as described in Method 502.2* or Method 524.2*.
- (6) 1,2-dichloroethane, as described in Method 502.2* or Method 524.2*.
- (7) cis-dichloroethylene, as described in Method 502.2* or Method 524.2*.
- (8) trans-dichloroethylene, as described in Method 502.2* or Method 524.2*.
- (9) Dichloromethane, as described in Method 502.2* or Method 524.2*.
- (10) 1,2-dichloropropane, as described in Method 502.2* or Method 524.2*.
- (11) Ethylbenzene, as described in Method 502.2* or Method 524.2*.
- (12) Styrene, as described in Method 502.2* or Method 524.2*.
- (13) Tetrachloroethylene, as described in Method 502.2*, Method 524.2*, or Method 551*.
- (14) 1,1,1-trichloroethane, as described in Method 502.2*, Method 524.2*, or Method 551*.
- (15) Trichloroethylene, as described in Method 502.2*, Method 524.2*, or Method 551*.
- (16) Toluene, as described in Method 502.2* or Method 524.2*.
- (17) 1,2,4-trichlorobenzene, as described in Method 502.2* or Method 524.2*.
- (18) 1,1-dichloroethylene, as described in Method 502.2* or Method 524.2*.
- (19) 1,1,2-trichloroethane, as described in Method 502.2* or Method 524.2*.
- (20) Vinyl chloride, as described in Method 502.2* or Method 524.2*.
- (21) Xylenes (total), as described in Method 502.2* or Method 524.2*.

(b) Analysis under this section shall only be conducted by laboratories that are certified by EPA or the commissioner according to the following conditions (laboratories may conduct sample analysis under provisional certification until January 1, 1996):

(1) To receive certification to conduct analyses for the contaminants in section 5.4 of this rule, except vinyl chloride, the laboratory must complete the following:

(A) Analyze performance evaluation samples which include these substances provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the commissioner.

(B) Achieve quantitative acceptance limits under clauses (C) and (D) for at least eighty percent (80%) of the regulated volatile organic chemicals listed in section 5.4 of this rule, except vinyl chloride.

(C) Achieve quantitative results on the analyses performed under clause (A) that are within plus or minus twenty percent (20%) of the actual amount of the substances in the performance evaluation sample when the actual amount is greater than or equal to ten-thousandths (0.010) milligram per liter.

(D) Achieve quantitative results on the analyses performed under clause (A) that are within plus or minus forty percent (40%) of the actual amount of the substances in the performance evaluation sample when the actual amount is less than ten-thousandths (0.010) milligram per liter.

(E) Achieve a method detection limit of five ten-thousandths (0.0005) milligram per liter, according to the procedures in Appendix B of 40 CFR 136 (July 1, 1991).

(2) To receive certification for vinyl chloride, the laboratory must complete the following:

(A) Analyze performance evaluation samples provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the commissioner.

(B) Achieve quantitative results on the analyses performed under clause (A) that are within plus or minus forty percent (40%) of the actual amount of vinyl chloride in the performance evaluation sample.

(C) Achieve a method detection limit of five ten-thousandths (0.0005) milligram per liter, according to the procedures in Appendix B of 40 CFR 136.

(D) Obtain certification for all contaminants listed in section 5.4 of this rule.

(c) The following procedure shall be followed to composite samples prior to analysis:

(1) Compositing of samples prior to gas chromatography (GC) analysis shall be as follows:

(A) Add five (5) milliliters or equal larger amounts of each sample (up to five (5) samples are allowed) to a twenty-five (25) milliliter glass syringe. Special precautions must be made to maintain zero (0) headspace in the syringe.

(B) The samples must be cooled at four degrees Celsius (4°C) during this step to minimize volatilization losses.

(C) Mix well and draw out a five (5) milliliter aliquot for analysis.

(D) Follow sample introduction, purging, and desorption steps described in the method.

(E) If less than five (5) samples are used for compositing, a proportionately smaller syringe may be used.

(2) Compositing of samples prior to gas chromatography/mass spectrometry (GC/MS) analysis shall be as follows:

(A) Inject five (5) milliliters or equal larger amounts of each aqueous sample (up to five (5) samples are allowed) into a twenty-five (25) milliliter purging device using the sample introduction technique described in the method.

(B) The total volume of the sample in the purging device must be twenty-five (25) milliliters.

(C) Purge and desorb as described in the method.

*Methods referenced in this section may be obtained as follows:

(1) Method 502.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water", October 1994, EPA-600/4-88-039, available from NTIS, PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(2) Method 524.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement II", August 1992, EPA-600/R-92-129, available from NTIS, PB92-207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(3) Method 551 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement I", July 1990, EPA-600-4-90-020, available from NTIS, PB91-146027, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

These methods are available for copying at the Indiana Department of Environmental Management, 100 North Senate Avenue, Room 1254, Indianapolis, Indiana 46204. (*Water Pollution Control Board; 327 IAC 8-2-5.6; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1015; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 44; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 939*)

327 IAC 8-2-6 Turbidity; maximum contaminant level (effective until June 28, 1993)

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 6. (a) The maximum contaminant level for turbidity is applicable to those community water systems and noncommunity water systems using surface water as a source in whole or in part. The maximum contaminant level for turbidity in drinking water measured at a representative entry point into the distribution system is as follows:

(1) One (1) nephelometric turbidity unit (NTU), as determined by a monthly average pursuant to section 6.1 of this rule, except that five (5) or fewer turbidity units may be allowed if the supplier of water can demonstrate to the commissioner that the higher turbidity does none of the following:

(A) Interfere with disinfection.

(B) Prevent maintenance of an effective disinfectant agent throughout the distribution system.

(C) Interfere with microbiological determinations.

(2) Five (5) nephelometric turbidity units (NTUs) based on an average of two (2) consecutive days pursuant to section 6.1 of this rule.

(b) For the purpose of making turbidity measurements to determine compliance with subsection (a), the measurement shall be made by the nephelometric methods in accordance with section 6.1(a)(3) of this rule. (*Water Pollution Control Board; 327 IAC 8-2-6; filed Sep 24, 1987, 3:00 p.m.: 11 IR 707; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1017*)

327 IAC 8-2-6.1 Collection of samples for turbidity testing (effective until June 28, 1993)

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 6.1. (a) Collection of samples for turbidity testing in order to determine compliance with section 6 of this rule shall be made as

follows:

- (1) Suppliers of water for community and noncommunity water systems shall collect water samples at representative entry points to the water distribution system at least once per day and shall analyze them or use the services of an approved laboratory to analyze them in order to determine compliance with section 6 of this rule.
- (2) The commissioner may reduce the turbidity sampling frequency in a noncommunity water system upon a determination that the reduced sampling frequency will not pose a risk to public health. The discretion to reduce turbidity sampling frequency shall be applicable only to those noncommunity water systems that practice disinfection and which maintain an active residual disinfectant in the distribution system, and in those cases where the commissioner indicates in writing that no unreasonable risk to health exists under the circumstances of this option.
- (3) The turbidity measurements shall be made by the nephelometric method in accordance with the recommendations set forth in "Standard Methods for Examination of Water and Wastewater," American Public Health Association, 14th Edition, pages 132 through 134; or "Methods of Chemical Analysis of Water and Wastes," EPA Environmental Monitoring and Support Laboratory, March 1979, Method 180.1-Nephelometric method. Calibration of the turbidimeter shall be made either by the use of a formazin standard as specified in the cited references or a styrene divinylbenzene polymer standard (Amco-AEPA-1 Polymer) commercially available from Amco Standards International, Inc., 230 Polaris Avenue, No. C, Mountain View, California 94043.
- (b) If the result of turbidity analysis indicates that the MCL has been exceeded, the sampling and measurement shall be confirmed by resampling as soon as practicable and preferably within one (1) hour. If the repeat sample confirms that the MCL has been exceeded, the supplier of water shall report to the commissioner within forty-eight (48) hours. The repeat sample shall be the sample used for the purpose of calculating the monthly average. If the monthly average of the daily sample exceeds the MCL, or if the average of two (2) samples taken on consecutive days exceeds five (5) turbidity units, the supplier of water shall report to the commissioner and notify the public as directed in sections 13 through 15 of this rule.
- (c) The commissioner has the authority to determine compliance or initiate enforcement based upon analytical results and other information compiled. (*Water Pollution Control Board; 327 IAC 8-2-6.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1017*)

327 IAC 8-2-7 Microbiological contaminants; maximum contaminant levels for all public water systems

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 7. (a) The microbiological MCL applies to all public water systems and is based on the presence or absence of total coliforms in a sample, rather than coliform density. For a system:

- (1) which collects at least forty (40) samples per month, if no more than five percent (5%) of the samples collected during a month are total coliform-positive, the system is in compliance with the MCL for total coliforms; or
- (2) which collects fewer than forty (40) samples per month, if no more than one (1) sample collected during a month is total coliform-positive, the system is in compliance with the MCL for total coliforms.
- (b) Any fecal coliform-positive repeat sample or *E. coli*-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or *E. coli*-positive routine sample, constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in section 15 of this rule, this is a violation that may pose an acute risk to health.
- (c) A public water system must determine compliance with the MCL for total coliforms in subsections (a) and (b) for each month in which it is required to monitor for total coliforms.
- (d) The following are BAT for achieving compliance with the MCL for total coliforms in subsections (a) and (b):
 - (1) Protection of wells from coliform contamination by appropriate placement and construction.
 - (2) Maintenance of a disinfectant residual throughout the distribution system.
 - (3) Proper maintenance of the distribution system, including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system.
 - (4) Filtration and/or disinfection of surface water, as described in sections 8.5 and 8.6 of this rule, or disinfection of ground water using strong oxidants such as chlorine, chlorine dioxide, or ozone.
 - (5) For systems using ground water compliance with the requirements of an EPA approved wellhead protection program developed and implemented under Section 1428 of the Safe Drinking Water Act.

(*Water Pollution Control Board; 327 IAC 8-2-7; filed Sep 24, 1987, 3:00 p.m.: 11 IR 707; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1018; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2154*)

327 IAC 8-2-8 Collection of samples for total coliform bacteria testing

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 8. (a) Public water systems must collect total coliform samples at sites which are representative of water throughout the

distribution system according to a written sample siting plan approved by the commissioner.

(b) The monitoring frequency for total coliforms for community water systems is based on the population served by the system and shall be as follows, unless the commissioner determines that more frequent sampling is appropriate:

**TOTAL COLIFORM MONITORING FREQUENCY
FOR COMMUNITY WATER SYSTEMS**

<u>Population served</u>	<u>Minimum number of samples per month</u>
25 to 1,000 ¹	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330

¹Includes public water systems which have at least fifteen (15) service connections but serve fewer than twenty-five (25) persons.

If a community water system serving twenty-five (25) to one thousand (1,000) persons has no history of total coliform contamination in its current configuration and a sanitary survey conducted in the past five (5) years shows that the system is supplied solely by a protected ground water source and is free of sanitary defects, the commissioner may reduce the monitoring frequency specified in this subsection, in writing, except that in no case may the commissioner reduce the monitoring frequency to less than one (1) sample per quarter.

(c) The monitoring frequency for total coliforms for noncommunity water systems is as follows:

(1) A noncommunity water system using only ground water (except ground water under the direct influence of surface water, as defined in section 1(22) of this rule) and serving one thousand (1,000) or fewer persons must monitor each calendar quarter that the system provides water to the public, except that the commissioner may reduce this monitoring frequency, in writing, if a sanitary survey shows that the system is free of sanitary defects. Beginning June 29, 1994, the commissioner shall not reduce the monitoring frequency for a noncommunity water system using only ground water (except ground water under the direct influence of surface water, as defined in section 1(22) of this rule) and serving one thousand (1,000) or fewer persons to less than once per year.

(2) A noncommunity water system using only ground water (except ground water under the direct influence of surface water, as defined in section 1(22) of this rule) and serving more than one thousand (1,000) persons during any month must monitor at the same frequency as a like-sized community water system, as specified in subsection (b), except the commissioner may reduce this monitoring frequency, in writing, for any month the system serves one thousand (1,000) or fewer persons. The commissioner shall not reduce the monitoring frequency to less than once per year. For systems using ground water under the direct influence of surface water, subdivision (4) applies.

(3) A noncommunity water system using surface water, in total or in part, must monitor at the same frequency as a like-sized

community water system, as specified in subsection (b), regardless of the number of persons it serves.

(4) A noncommunity water system using ground water under the direct influence of surface water, as defined in section 1(22) of this rule, must monitor at the same frequency as a like-sized community water system specified in subsection (b). The system must begin monitoring at this frequency beginning six (6) months after the commissioner determines that the ground water is under the direct influence of surface water.

(d) The public water system must collect samples at regular time intervals throughout the month, except that a system which uses only ground water (except ground water under the direct influence of surface water, as defined in section 1(22) of this rule) and serves four thousand nine hundred (4,900) persons or fewer, may collect all required samples on a single day if they are taken from different sites.

(e) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for total coliforms in section 7 of this rule. Repeat samples taken under section 8.1 of this rule are not considered special purpose samples and must be used to determine compliance with the MCL for total coliforms required by section 7 of this rule.

(f) A total coliform-positive sample invalidated under this subsection does not count towards meeting the minimum monitoring requirements of this section. The total coliform-positive sample may be invalidated only if the following conditions are met:

(1) The laboratory establishes that improper sample analysis caused the total coliform-positive result.

(2) The commissioner, on the basis of the results of repeat samples collected as required by section 8.1(a) through 8.1(d) of this rule, determines that the total coliform-positive sample resulted from a domestic or other nondistribution system plumbing problem. The commissioner cannot invalidate a sample on the basis of repeat sample results unless all repeat samples collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five (5) service connections of the original tap are total coliform-negative, for example, the commissioner cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative or if the public water system has only one (1) service connection.

(3) The commissioner has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required by section 8.1(a) through 8.1(d) of this rule and use them to determine compliance with the MCL for total coliforms in section 7 of this rule. To invalidate a total coliform-positive sample under this subsection, the decision must be documented, in writing, and approved and signed by the supervisor of the state official who recommended the decision. The commissioner must make this document available to EPA and the public. The written documentation must state the specific cause of the total coliform-positive sample and what action the system has taken, or will take, to correct this problem. The commissioner may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

(4) A laboratory must invalidate a total coliform sample, unless total coliforms are detected, if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined, for example, the multiple-tube fermentation technique, produces a turbid culture in the absence of an acid reaction in the presence-absence (P-A) coliform test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter, for example, the membrane filter technique. If a laboratory invalidates a sample because of such interference, the system must collect another sample from the same location as the original sample within twenty-four (24) hours of being notified of the interference problem and have it analyzed for the presence of total coliforms. The system must continue to resample within twenty-four (24) hours and have the samples analyzed until it obtains a valid result. The commissioner may waive the twenty-four (24) hour time limit on a case-by-case basis.

(Water Pollution Control Board; 327 IAC 8-2-8; filed Sep 24, 1987, 3:00 p.m.: 11 IR 707; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1019; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2155)

327 IAC 8-2-8.1 Repeat monitoring for total coliform bacteria

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 8.1. (a) If a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within twenty-four (24) hours of being notified of the positive result. A system which collects more than one (1) routine sample per month must collect no fewer than three (3) repeat samples for each total coliform-positive sample found. A system which collects one (1) routine sample per month or fewer must collect no fewer than four (4) repeat samples for each total coliform-positive sample found. The commissioner may extend the twenty-four (24) hour limit up to forty-eight (48) hours on a case-by-case basis if the system has a problem beyond its control in collecting the repeat samples within twenty-four (24) hours.

(b) The system must collect at least one (1) repeat sample from the sampling tap where the original total coliform-positive sample was taken, at least one (1) repeat sample at a tap within five (5) service connections upstream, and at least one (1) repeat sample at a tap within five (5) service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the

distribution system, or one (1) away from the end of the distribution system, the commissioner may waive the requirement to collect at least one (1) repeat sample upstream or downstream of the original sampling site.

(c) The system must collect all repeat samples on the same day, except that the commissioner may allow a system with a single service connection to collect the required set of repeat samples over a four (4) day period or to collect a larger volume of repeat samples in one (1) or more sample containers of any size, as long as the total volume collected is at least four hundred (400) milliliters or three hundred (300) milliliters for systems which collect more than one (1) routine sample per month.

(d) If one (1) or more repeat samples in the set is total coliform-positive, the public water system must collect an additional set of repeat samples in the manner specified in subsections (a) through (c). The additional samples must be collected within twenty-four (24) hours of being notified of the positive result, unless the commissioner extends the limit as provided in subsection (a). The system must repeat this process until either total coliforms are not detected in one (1) complete set of repeat samples or the system determines that the MCL for total coliforms in section 7 of this rule has been exceeded and notifies the commissioner.

(e) If a system collecting fewer than five (5) routine samples per month has one (1) or more total coliform-positive samples, and the commissioner does not invalidate the samples under section 8(f) of this rule, it must collect at least five (5) routine samples during the next month the system provides water to the public, except that the commissioner may waive this requirement if the following conditions are met:

(1) The commissioner may waive the requirement to collect five (5) routine samples the next month the system provides water to the public if the commissioner, or an agent approved by the commissioner, performs a site visit before the end of the next month the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the commissioner to determine whether additional monitoring and/or any corrective action is needed. An employee of the system shall not be approved to perform this site visit.

(2) The commissioner may waive the requirement to collect five (5) routine samples the next month the system provides water to the public if the commissioner has determined why the sample was total coliform-positive and establishes that the system has corrected the problem or will correct the problem before the end of the next month the system serves water to the public. In this case, the decision to waive the following month's additional monitoring requirement must be documented in writing, approved, and signed by the supervisor of the state official who recommends such a decision and made available to the EPA and public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system has taken and/or will take to correct this problem. The requirement to collect five (5) routine samples the next month the system provides water to the public cannot be waived solely on the grounds that all repeat samples are total coliform-negative. Under this subdivision, a system must still take at least one (1) routine sample before the end of the next month it serves water to the public and use it to determine compliance with the MCL for total coliforms in section 7 of this rule, unless the commissioner has determined that the system has corrected the contamination problem before the system took the set of repeat samples required in subsections (a) through (d) and all repeat samples were total coliform-negative. The commissioner shall not waive the requirement for a system to collect repeat samples in subsections (a) through (d).

(f) After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample from within five (5) adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the system may count the subsequent samples as a repeat sample instead of as a routine sample.

(g) Results of all routine and repeat samples not invalidated by the commissioner must be included in determining compliance with the MCL for total coliforms in section 7 of this rule. (*Water Pollution Control Board; 327 IAC 8-2-8.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1021; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2157*)

327 IAC 8-2-8.2 Sanitary surveys

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 8.2. (a) Public water systems which do not collect five (5) or more routine samples per month must undergo an initial sanitary survey by June 29, 1994, for community public water systems and June 29, 1999, for noncommunity water systems. Thereafter, systems must undergo another sanitary survey every five (5) years or more frequently, as determined by the commissioner, except that noncommunity water systems using only protected and disinfected ground water, as determined by the commissioner, must undergo subsequent sanitary surveys at least every ten (10) years after the initial sanitary survey. The commissioner must review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what measures the system needs to undertake to improve drinking water quality.

(b) In conducting a sanitary survey of a system using ground water after EPA approves a wellhead protection program under Section 1428 of the Safe Drinking Water Act, information on sources of contamination within the delineated wellhead protection area that was collected in the course of developing and implementing the program should be considered instead of collecting new information if the information was collected since the last time the system was subject to a sanitary survey.

(c) Sanitary surveys must be performed by the commissioner or an agent approved by the commissioner. The public water system must ensure that the sanitary survey takes place. (*Water Pollution Control Board; 327 IAC 8-2-8.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1022; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2158*)

327 IAC 8-2-8.3 Collection of samples for fecal coliforms or *Escherichia coli* (*E. coli*) testing

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 8.3. (a) If any routine or repeat sample is total coliform-positive, the public water supply system must analyze that total coliform-positive culture medium to determine if fecal coliforms are present, except that the system may test for *E. coli* in lieu of fecal coliforms. If fecal coliforms or *E. coli* are present, the public water supply system must notify the commissioner by the end of the same business day that the system is notified of the test results. If the system is notified of the result after the close of business, the system shall notify the commissioner before the end of the next business day.

(b) The commissioner has the discretion to allow a public water system, on a case-by-case basis, to forego fecal coliform or *E. coli* testing on a total coliform-positive sample if that system assumes that the total coliform-positive sample is fecal coliform-positive or *E. coli*-positive. Accordingly, the system must notify the commissioner as specified in subsection (a), and the provisions of section 7(b) of this rule apply. (*Water Pollution Control Board; 327 IAC 8-2-8.3; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1022; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2158*)

327 IAC 8-2-8.4 Analytical methods for microbiological contaminants

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 8.4. (a) A public water system shall analyze for microbiological contaminants as follows:

(1) The standard sample volume required for total coliform analysis, regardless of analytical method used, is one hundred (100) milliliters.

(2) Public water systems need only determine the presence or absence of total coliforms, and a determination of total coliform density is not required.

(3) Public water systems must conduct total coliform analyses in accordance with one (1) of the following analytical methods:

(A) Total coliform fermentation technique^{2, 3, 4} as set forth in Method 9221A* and Method 9221B*.

(B) Total coliform membrane filter technique as set forth in Method 9222A*, Method 9222B*, and Method 9222C*.

(C) Presence-absence (P-A) coliform test^{4, 5} as set forth in Method 9221D*.

(D) ONPG-MUG test⁶ as set forth in Method 9223*.

(E) Colisure test⁷.

(4) Public water systems must conduct fecal coliform analysis in accordance with the procedure in this subdivision. When the MTF technique or presence-absence (P-A) coliform test is used to test for total coliforms, shake the lactose-positive presumptive tube or P-A bottle vigorously and transfer the growth with a sterile three (3) millimeter loop or sterile applicator stick into brilliant green lactose bile broth and EC medium to determine the presence of total and fecal coliforms, respectively. For EPA-approved analytical methods which use a membrane filter, transfer the total coliform-positive culture by one (1) of the following methods:

(A) Remove the membrane containing the total coliform colonies from the substrate with a sterile forceps and carefully curl and insert the membrane into a tube of EC medium. (The laboratory may first remove a small portion of selected colonies for verification.)

(B) Alternately, the laboratory may swab the entire membrane filter surface with a sterile cotton swab and transfer the inoculum to EC medium (do not leave the cotton swab in the EC medium), or inoculate individual total coliform-positive colonies into EC medium.

Gently shake the inoculated EC tubes to ensure adequate mixing and incubate in a water bath at forty-four and one-half degrees Celsius (44.5°C), plus or minus two-tenths degrees Celsius (0.2°C), for twenty-four (24) hours, plus or minus two (2) hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test. The preparation of EC medium is described in Method 9221E, page 9-52, paragraph 1(a)*. Public water systems need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.

(5) Public water systems must conduct analysis of *Escherichia coli* in accordance with one (1) of the following analytical methods:

(A) EC medium supplemented with fifty (50) micrograms per milliliter of 4-methylumbelliferyl-beta-D-glucuronide (MUG) (final concentration). EC medium is described in Method 9221E, page 9-52, paragraph 1(a)*. MUG may be added to EC medium before autoclaving. EC medium supplemented with fifty (50) micrograms per milliliter of MUG is commercially available. At least ten (10) milliliters of EC medium supplemented with MUG must be used. The inner inverted fermentation tube may be omitted. The procedure for transferring a total coliform-positive culture to EC medium supplemented with MUG shall be as specified in subdivision (5) for transferring a total coliform-positive culture to EC medium. Observe fluorescence with an ultraviolet light three

hundred sixty-six (366) nanometers (preferably with a six (6) watt lamp) in the dark after incubating tube at forty-four and one-half degrees Celsius (44.5°C), plus or minus two-tenths degrees Celsius (0.2°C) for twenty-four (24) hours, plus or minus two (2) hours.

(B) Nutrient agar supplemented with one hundred (100) micrograms per milliliter of MUG (final concentration). Nutrient agar is described in Method 9221E, pages 9-47 to 9-48*. This test is used to determine if a total coliform-positive sample, as determined by the membrane filter technique or any other method in which a membrane filter is used contains *E. coli*. Transfer the membrane filter containing a total coliform colony(ies) to nutrient agar supplemented with one hundred (100) micrograms per milliliter (final concentration) of MUG. After incubating the agar plate at thirty-five degrees Celsius (35°C) for four (4) hours, observe the colony(ies) under ultraviolet light three hundred sixty-six (366) nanometers (preferably with a six (6) watt lamp) in the dark for fluorescence. If fluorescence is visible, *E. coli* are present.

(C) If the MMO-MUG test is total coliform-positive after a twenty-four (24) hour incubation, test the medium for fluorescence with a three hundred sixty-six (366) nanometer ultraviolet light (preferably with a six (6) watt lamp) in the dark. If fluorescence is observed, the sample is *E. coli*-positive. If fluorescence is questionable (cannot be definitively read) after twenty-four (24) hours incubation, incubate the culture for an additional four (4) hours, but not to exceed twenty-eight (28) hours total, and again test the medium for fluorescence. The MMO-MUG test with hepes buffer in lieu of phosphate buffer is the only approved formulation for the detection of *E. coli*.

(6) As an option to subdivision (6)(C), a system with a total coliform-positive, MUG-negative, MMO-MUG test may further analyze the culture for the presence of *E. coli* by transferring a one-tenth (0.1) milliliter, twenty-eight (28) hour MMO-MUG culture to EC medium plus MUG with a pipet. The formulation and incubation conditions of EC medium plus MUG and observation of the results are described in subdivision (6)(A).

(b) Response to a violation shall be as follows:

(1) A public water system which has exceeded the MCL for total coliforms in section 7 of this rule must report the violation to the commissioner no later than the end of the next business day after it learns of the violation and notify the public in accordance with section 15 of this rule.

(2) A public water system which has failed to comply with a coliform monitoring requirement, including the sanitary survey requirement, must report the monitoring violation to the commissioner within ten (10) days after the system discovers the violation, and notify the public in accordance with section 15 of this rule.

¹The time from sample collection to initiation of analysis cannot exceed thirty (30) hours.

²Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth if the system conducts at least twenty-five (25) parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate for total coliforms using lactose broth is less than ten percent (10%).

³If inverted tubes are used to detect gas production, the media should cover these tubes at least one-half (2) to two-thirds (b) after the sample is added.

⁴No requirement exists to run the completed phase on ten percent (10%) of all total coliform-positive confirmed tubes.

⁵Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.

⁶The OPNG-MUG test is also known as the Autoanalysis Colilert System.

⁷The Colisure test must be incubated for twenty-eight (28) hours before examining the results. If an examination of the results at twenty-eight (28) hours is not convenient, then results may be examined at any time between twenty-eight (28) and forty-eight (48) hours.

*The methods referenced in this section may be obtained as follows:

(1) Methods 9221A, 9221B, 9222A, 9222B, 9222C, 9221D, 9223, and 9221E may be found in "Standard Methods for the Examination of Water and Wastewater", 1992, American Public Health Association, et al., 18th edition, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

(2) A description of the Colisure test may be obtained from the Millipore Corporation, Technical Services Department, 80 Ashby Road, Bedford, Massachusetts 01730.

(3) The minimal medium ONPG-MUG test may be found in "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with Presence-Absence Techniques", (Edberg, et al.), Applied and Environmental Microbiology, Volume 55, pages 1003-1008, April 1989.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-8.4; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1023; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2158; filed Aug 25, 1997, 8:00 a.m.: 21 IR 51*)

327 IAC 8-2-8.5 Requirement for filtration and disinfection

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 8.5. (a) Effective June 29, 1993, a public water system that uses a surface water source must provide filtration in accordance with this section.

(b) A public water system that uses a ground water source under the direct influence of surface water shall provide filtration in accordance with this section beginning eighteen (18) months after the commissioner determines that it is under the direct influence of surface water from the date specified in section 8.2 of this rule.

(c) A public water system that uses a surface water source or a ground water source under the direct influence of surface water must provide treatment consisting of both disinfection, as specified in section 8.6 of this rule and filtration treatment. Filtration treatment shall be done by one (1) of the following techniques, and the turbidity level of representative samples of a system's filtered water, regardless of filtration technique used, shall at no time exceed five (5) nephelometric turbidity units (NTU) in any given sample, measured as specified in section 8.7 of this rule:

(1) For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to one-half (0.5) NTU in at least ninety-five percent (95%) of the total number of measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule, except that if the commissioner determines that the system is capable of achieving at least ninety-nine and nine-tenths percent (99.9%) removal and/or inactivation of *Giardia lamblia* cysts at some turbidity level higher than one-half (0.5) NTU in at least ninety-five percent (95%) of the total number of measurements taken each month, the commissioner may substitute this higher turbidity limit for that system. However, in no case may the commissioner approve a turbidity limit that allows more than one (1) NTU in more than five percent (5%) of the samples taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule.

(2) For systems using slow sand filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to one (1) NTU in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule, except where the commissioner determines that there is no significant interference with disinfection at a higher turbidity level.

(3) For systems using diatomaceous earth filtration, the turbidity level of representative samples of a public water system's filtered water must be less than or equal to one (1) NTU in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule.

(4) A public water system may use a filtration technology not listed in this subsection if it demonstrates to the commissioner, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of section 8.6 of this rule, consistently achieves ninety-nine and nine-tenths percent (99.9%) removal and/or inactivation of *Giardia lamblia* cysts and ninety-nine and ninety-nine hundredths percent (99.99%) removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of this subsection apply.

(d) During plant operation, each public water system subject to this section shall be operated only by personnel who have been certified by the commissioner under 327 IAC 8-11 through 327 IAC 8-12. (*Water Pollution Control Board; 327 IAC 8-2-8.5; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1024; errata filed Apr 5, 1991, 3:30 p.m.: 14 IR 1626; errata, 14 IR 1730; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2160*)

327 IAC 8-2-8.6 Disinfection treatment

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 8.6. Effective June 29, 1993, each public water system that provides filtration treatment must provide disinfection treatment as follows:

(1) The disinfection treatment must be sufficient to ensure that the total treatment processes of that system achieve at least ninety-nine and nine-tenths percent (99.9%) (3-log) inactivation and/or removal of *Giardia lamblia* cysts and at least ninety-nine and ninety-nine hundredths percent (99.99%) (4-log) inactivation and/or removal of viruses, as determined by the commissioner.

(2) The residual disinfectant concentration in the water entering the distribution system, measured as specified in sections 8.7(5) and 8.8(d) of this rule, cannot be less than two-tenths (0.2) milligram per liter for more than four (4) hours.

(3) The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in sections 8.7(5) and 8.8(d) of this rule, cannot be undetectable in more than five percent (5%) of the samples each month, for any two (2) consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to five hundred (500) per milliliter, measured as heterotrophic plate count (HPC) as specified in section 8.7(3) of this rule, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. Thus, the value V in the following formula cannot exceed five percent (5%) in one (1) month, for any two (2) consecutive months:

Install Equation Editor and double-click here to view equation.

Where: a = number of instances where the residual disinfectant concentration is measured

- b = number of instances where the residual disinfectant concentration is not measured but HPC is measured
- c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured.
- d = number of instances where no residual disinfectant concentration is detected and where the HPC is greater than five hundred (500) per milliliter
- e = number of instances where the residual disinfectant concentration is not measured and HPC is greater than five hundred (500) per milliliter

(4) If the commissioner determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in section 8.7 of this rule and that the system is providing adequate disinfection in the distribution system, the requirements of subdivision (3) do not apply.

(Water Pollution Control Board; 327 IAC 8-2-8.6; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1024; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2161)

327 IAC 8-2-8.7 Analytical and monitoring requirements; fecal coliform, total coliform, turbidity, disinfection

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 8.7. Only the analytical methods and procedures specified in this section, or otherwise approved by EPA, may be used to demonstrate compliance with the requirements of sections 8.5 and 8.6 of this rule. Public water systems must conduct analysis of pH and temperature in accordance with the methods listed in section 45(a) of this rule. Public water systems must conduct analysis of total coliforms, fecal coliforms, heterotrophic plate count, and turbidity with one (1) of the following analytical methods:

- (1) Total coliform concentration¹ as set forth in the following:
 - (A) Total coliform fermentation technique^{2, 3, 4}, pages 9221A*, B*, and C*.
 - (B) Total coliform membrane filter technique, pages 9222A*, B*, and C*.
 - (C) ONPG-MUG test membrane, page 9223*⁵.
- (2) Fecal coliform concentration as set forth in:
 - (A) fecal coliform procedure⁶, page 9221E*; or
 - (B) fecal coliform filter procedure, page 9222D.
- (3) Heterotrophic plate count, Method 9215B*, pour plate method.
- (4) Turbidity as set forth in:
 - (A) nephelometric method, page 2130B* or Method 180.1*; or
 - (B) Great Lakes Instruments method, Method 2.
- (5) Residual disinfectant concentrations for free chlorine and combined chlorine (chloramines) as set forth in the following methods:
 - (A) Method 4500-Cl D*, amperometric titration method.
 - (B) Method 4500-Cl F*, DPD ferrous titrimetric method.
 - (C) Method 4500-Cl G*, DPD colorimetric method.
 - (D) Method 4500-Cl H*, syringaldazine (FACTS).
 - (E) DPD colorimetric test kits, if approved by the commissioner.
 - (F) Free chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument, provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five (5) days, or with a protocol approved by the commissioner.
- (6) Residual disinfectant concentrations for ozone by the indigo method, Method 4500-O₃ B*.
- (7) Residual disinfectant concentrations for chlorine dioxide must be measured by Method 4500-ClO₂ C, amperometric method, Method 4500-ClO₂ E*, amperometric method, or Method 4500-ClO₂ D*, DPD method.
- (8) Residual disinfectant concentrations for total chlorine by the following methods:
 - (A) Method 4500-Cl D*, amperometric titration.
 - (B) Method 4500-Cl E*, amperometric titration (low level measurement).
 - (C) Method 4500-Cl F*, DPD ferrous titrimetric.
 - (D) Method 4500-Cl I, iodometric electrode.
 - (E) Method 4500-Cl G*, DPD colorimetric.
 - (F) Total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument, provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five (5) day [*sic.*], or with a protocol approved by the commissioner.

¹The time from sample collection to initiation of analysis may not exceed eight (8) hours. Systems are encouraged but not required to hold samples below ten degrees Celsius (10°C) during transit.

²Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth if the system conducts at least twenty-five (25) parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for total coliforms using lactose broth, is less than ten percent (10%).

³Media should cover inverted tubes at least one-half (2) to two-thirds (b) after the sample is added.

⁴No requirement exists to run the completed phase on ten percent (10%) of all total coliform-positive confirmed tubes.

⁵The ONPG-MUG test is also known as the Autoanalysis Colilert System.

⁶A-1 broth may be held up to three (3) months in a tightly closed screwcap tube at four degrees Celsius (4°C).

*Methods referenced in this section, except Method 180.1 and the Great Lakes Instruments Method 2, may be found in "Standard Methods for the Examination of Water and Wastewater", 1992, American Public Health Association, et al., 18th edition and must be done using procedures found in "Technical Notes on Drinking Water Methods", EPA-600/R-94-173, October 1994, available from NTIS, PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. Method 180.1 and the Great Lakes Instrument Method 2 may be obtained as follows:

(1) Method 180.1 may be found in "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993, available from NTIS, PB94-121811, PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(2) The Great Lakes Instrument (GLI) Method 2 may be found in "Turbidity", November 2, 1992, Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, Wisconsin 53223.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-8.7; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1025; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2161; filed Aug 25, 1997, 8:00 a.m.: 21 IR 53*)

327 IAC 8-2-8.8 Monitoring requirements; systems that provide filtration treatment

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-14-5

Affected: IC 13-7

Sec. 8.8. (a) A public water system that uses a surface water source or a ground water source under the influence of surface water and provides filtration treatment must monitor in accordance with this section beginning June 29, 1993, or when filtration is installed, whichever is later.

(b) Turbidity measurements as required by section 8.5 of this rule must be performed on representative samples of the system's filtered water every four (4) hours (or more frequently) that the system serves water to the public. A public water system may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis and obtains approval from the commissioner. For any systems using slow sand filtration, filtration treatment other than conventional treatment, direct filtration, or diatomaceous earth filtration, the commissioner may reduce the sampling frequency to once per day if he or she determines that less frequent monitoring is sufficient to indicate effective filtration performance. For systems serving five hundred (500) or fewer persons, the commissioner may reduce the turbidity sampling frequency to once per day, regardless of the type of filtration treatment used, if the commissioner determines that less frequent monitoring is sufficient to indicate effective filtration performance.

(c) The residual disinfectant concentration of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day, except that if there is a failure in the continuous monitoring equipment, grab sampling every four (4) hours may be conducted in lieu of continuous monitoring, but for no more than two (2) working days following the failure of the equipment, and systems serving three thousand three hundred (3,300) or fewer persons may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies each day prescribed as follows:

System size

*The daily population cannot be taken as samples per day. *The sampling intervals are subject to review and approval by the commissioner. If at any time the residual disinfectant concentration falls below two-tenths (0.2) milligram per liter in a system using grab sampling in lieu of continuous monitoring, the system must take a grab sample every four (4) hours until the residual disinfectant concentration is equal to or greater than two-tenths (0.2) milligram per liter.

(d) The residual disinfectant concentration must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in section 8 of this rule, except that the commissioner may allow a public water system which uses both a surface water source or a ground water source under direct influence of surface water, and a ground water source to take disinfectant residual samples at points other than the total coliform sampling points if the commissioner determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC), as specified in section 8.7(3) of this rule, may be measured in lieu of residual disinfectant concentration.

(e) If the commissioner determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in section 8.7(3) of this rule, and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (d) do not apply to that

system. (Water Pollution Control Board; 327 IAC 8-2-8.8; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1026; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2162)

327 IAC 8-2-9 Radium-226, radium-228, and gross alpha particle radioactivity; maximum contaminant levels

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 9. The following are the maximum contaminant levels for radium-226, radium-228, and gross alpha particle radioactivity:

- (1) Combined radium-226 and radium-228: five (5) picocuri per liter.
- (2) Gross alpha particle activity (including radium-226 but excluding radon and uranium): fifteen (15) picocuri per liter.
- (3) The sampling frequency for the contaminants listed in this section shall be pursuant to section 10.2 of this rule.

(Water Pollution Control Board; 327 IAC 8-2-9; filed Sep 24, 1987, 3:00 p.m.: 11 IR 708; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1027)

327 IAC 8-2-10 Beta and photon radioactivity from manmade radionuclides; maximum contaminant levels

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 10. (a) The average annual concentration of beta particle and photon radioactivity from manmade radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than four (4) millirem per year.

(b) Except for the radionuclides listed in the following table, the concentration of manmade radionuclides causing four (4) millirem total body or organ dose equivalent shall be calculated on the basis of a two (2) liter per day drinking water intake using the one hundred sixty-eight (168) hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69 as amended August 1963, U.S. Department of Commerce. If two (2) or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed four (4) millirem per year.

Average annual concentrations assumed to produce a total

(c) The sampling frequency for the contaminants listed in subsections (a) through (b) shall be pursuant to section 10.2 of this rule. (Water Pollution Control Board; 327 IAC 8-2-10, filed Sep 24, 1987, 3:00 p.m.: 11 IR 708; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1027; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258)

Radionuclide		Critical Organ
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

327 IAC 8-2-10.1 Analytical methods for radioactivity

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 10.1. (a) The methods specified in "Interim Radiochemical Methodology for Drinking Water," Environmental Monitoring and Support Laboratory, EPA-600/4-75-008, U.S. EPA, Cincinnati, Ohio 45268, or those listed as follows, shall be used to determine compliance with sections 9 through 10 of this rule, except in cases where alternative methods have been approved in accordance with section 32 of this rule:

- (1) Gross alpha and beta: Method 302 "Gross Alpha and Beta Radioactivity in Water" Standard Methods for the Examination of Water and Wastewater, 13th Edition, American Public Health Association, New York, NY 1971.
- (2) Total radium: Method 304 "Radium in Water by Precipitation," *ibid*.
- (3) Radium-226: Method 305 "Radium-226 by Radon in Water," *ibid*.
- (4) Strontium-89, 90: Method 303 "Total Strontium and Strontium-90 in Water," *ibid*.
- (5) Tritium: Method 306 "Tritium in Water," *ibid*.
- (6) Cesium-134: ASTM D-2459 "Gamma Spectrometry in Water," 1975 Annual Book of ASTM Standards, Water and Atmospheric Analysis, Part 31, American Society for Testing and Materials, Philadelphia, PA (1975).
- (7) Uranium: ASTM D-2907 "Microquantities of Uranium in Water by Fluorometry," *ibid*.

(b) When the identification and measurement of radionuclides other than those listed in subsection (a) is required, the following references are to be used, except in cases where alternative methods have been approved in accordance with section 32 of this rule:

- (1) Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions, H.L. Krieger and S. Gold, EPA-R4-73-014, U.S. EPA, Cincinnati, Ohio, May 1973.
- (2) HASL Procedure Manual, edited by John H. Harley. HASL 300, ERDA Health and Safety Laboratory, New York, NY 1973.

(c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit shall be that concentration which can be counted with a precision of plus or minus one hundred percent (100%) at the ninety-five percent (95%) confidence level (one and ninety-six hundredths (1.96) σ where σ is the

standard deviation of the net counting rate of the sample). Compliance requirements are as follows:

- (1) To determine compliance with section 9(1) of this rule, the detection limit shall not exceed one (1) picocuri per liter.
- (2) To determine compliance with section 9(2) of this rule, the detection limit shall not exceed three (3) picocuri per liter.
- (3) To determine compliance with section 10 of this rule, the detection limits shall not exceed the concentrations listed in the following table:

Detection limits for manmade beta particle

(d) To determine compliance with the MCL listed in sections 9 through 10 of this rule, averages of data shall be used and shall be the same number of significant figures as the MCL for the contaminant in question. (*Water Pollution Control Board; 327 IR 8-2-10.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1028; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258*)

Radium-226 10 pCi/l

Strontium-89 10 pCi/l

Strontium-90 2 pCi/l

327 IAC 8-2-10.2 Monitoring frequency for radioactivity; community water systems

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 10.2. (a) Monitoring requirements for gross alpha particle activity, radium-226, and radium-228 in community water systems

are as follows:

- (1) Compliance with section 9 of this rule shall be based on the analysis of an annual composite of four (4) consecutive quarterly samples or the average of the analyses of four (4) samples obtained at quarterly intervals as follows:

(A) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis, provided that the measured gross alpha particle activity does not exceed five (5) picocuri per liter at a confidence level of ninety-five percent (95%) (one and sixty-five hundredths (1.65) σ where σ is the standard deviation of the net counting rate of this sample). In localities where radium-228 may be present in drinking water, it is recommended that the commissioner require radium-226 and/or radium-228 analyses when the gross alpha particle activity exceeds two (2) picocuri per liter.

(B) When the gross alpha particle activity exceeds five (5) picocuri per liter, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds three (3) picocuri per liter, the same or an equivalent sample shall be analyzed for radium-228.

- (2) Suppliers of water shall monitor at least once every four (4) years following the procedure required by subdivision (1). At the discretion of the commissioner, when an annual record taken in conformance with subdivision (1) has established that the average annual concentration is less than one-half (1/2) the MCL established by section 9 of this rule, analysis of a single sample may be substituted for the quarterly sampling procedure required by subdivision (1) as follows:

(A) More frequent monitoring shall be conducted when ordered by the commissioner in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or ground water sources of drinking water.

(B) A supplier of water shall monitor in conformance with subdivision (1) within one (1) year of the introduction of a new water source for a community water system. More frequent monitoring shall be conducted when ordered by the commissioner in the event of possible contamination, or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in finished water.

(C) A community water system using two (2) or more sources having different concentrations of radioactivity shall monitor source water, in addition to water from a free-flowing tap, when ordered by the commissioner.

(D) Monitoring for compliance with section 9 of this rule after the initial period need not include radium-228 except when required by the commissioner, provided that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by subdivision (1).

(E) Suppliers of water shall conduct monitoring of any community water system in which the radium-226 concentration exceeds three (3) picocuri per liter, when ordered by the commissioner.

- (3) If the average annual MCL for gross alpha particle activity or total radium as set forth in section 9 of this rule is exceeded, the supplier for a community water system shall report to the commissioner pursuant to section 13 of this rule and notify the public pursuant to section 15 of this rule. Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the MCL or until a monitoring schedule as a condition to a variance or enforcement action shall become effective.

(b) Monitoring requirements for manmade radioactivity in community water systems are as follows:

- (1) Systems using surface water sources and serving more than one hundred thousand (100,000) persons and such other community water systems as are designated by the commissioner shall be monitored for compliance with section 10 of this rule by analysis of a composite of four (4) consecutive quarterly samples or analysis of four (4) quarterly samples. Compliance with section 10 of this rule may be assumed without further analysis if the average annual concentration of gross beta particle activity is less than fifty (50) picocuri per liter and if the average annual concentrations of tritium and strontium-90 are less than those listed in the table in section 10 of this rule. Provided, that if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed four (4) millirem per year as follows:

(A) If the gross beta particle activity exceeds fifty (50) picocuri per liter an analysis of the sample must be performed to identify

the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with section 10 of this rule.

(B) Suppliers of water shall conduct additional monitoring, as ordered by the commissioner, to determine the concentration of manmade radioactivity in principal watersheds designated by the commissioner.

(C) At the discretion of the commissioner, suppliers of water utilizing only ground water may be required to monitor for manmade radioactivity.

(2) Suppliers of water shall monitor at least every four (4) years following the procedure given in subdivision (1).

(3) The supplier for any community water system designated by the commissioner as utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium as follows:

(A) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three (3) monthly samples. The former is recommended. If the gross beta particle activity in a sample exceeds fifteen (15) picocuri per liter, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds fifty (50) picocuri per liter, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with section 10 of this rule.

(B) For iodine-131, a composite of five (5) consecutive daily samples shall be analyzed once each quarter. At the direction of the commissioner, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

(C) Annual monitoring for strontium-90 and tritium shall be conducted by analysis of a composite of four (4) consecutive quarterly samples or analysis of four (4) quarterly samples. The latter procedure is recommended.

(D) The commissioner may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of manmade radioactivity by the supplier of water where the commissioner determines such data are applicable to a particular community water system.

(4) If the average annual MCL for manmade radioactivity set forth in section 10 of this rule is exceeded, the operator of a community water system shall report to the commissioner pursuant to section 13 of this rule and give notice to the public pursuant to section 15 of this rule. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the MCL or until a monitoring schedule as a condition to a variance or enforcement action shall become effective.

(Water Pollution Control Board; 327 IAC 8-2-10.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1029; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258)

327 IAC 8-2-11 Modification of sampling frequency by board *(Repealed)*

Sec. 11. *(Repealed by Water Pollution Control Board; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047)*

327 IAC 8-2-12 Maximum contaminant level exceeded; required procedure *(Repealed)*

Sec. 12. *(Repealed by Water Pollution Control Board; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047)*

327 IAC 8-2-13 Reporting requirements; test results and failure to comply

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 13. (a) Except where a shorter period is specified in this rule, the supplier of water shall report to the commissioner the results of any test measurement or analysis required by this rule within:

(1) the first ten (10) days following the month in which the result is received; or

(2) the first ten (10) days following the end of the required monitoring period as stipulated by the commissioner, whichever is shorter.

(b) The supplier of water shall report to the commissioner within forty-eight (48) hours the failure to comply with any MCL and any other requirement set forth in this rule.

(c) The supplier of water, upon initiation of each public notification required by section 15 of this rule, shall submit to the commissioner a representative copy of each type of notice distributed, published, posted, or made available to the persons served by the system or to the media. *(Water Pollution Control Board; 327 IAC 8-2-13; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1030)*

327 IAC 8-2-14 Reporting and record keeping requirements; systems that provide filtration

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 14. (a) Effective June 29, 1993, a public water system that uses a surface water source or a ground water source under the direct influence of surface water and provides filtration treatment must report monthly to the commissioner the information specified in this

section.

(b) Turbidity measurements as required by section 8.8(b) of this rule must be reported within ten (10) days after the end of each month the system serves water to the public. Information that must be reported includes the following:

- (1) The total number of filtered water turbidity measurements taken during the month.
- (2) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in section 8.5(c) of this rule for the filtration technology being used.
- (3) The date and value of any turbidity measurements taken during the month which exceed five (5) nephelometric turbidity units (NTU).

(c) Disinfection information specified in section 8.8 of this rule must be reported to the commissioner within ten (10) days after the end of each month the system serves water to the public. Information that must be reported includes the following:

- (1) For each day, the lowest measurement of residual disinfectant concentration in milligrams per liter in water entering the distribution system.
- (2) The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below two-tenths (0.2) milligram per liter and when the commissioner was notified of the occurrence.
- (3) The following information on the samples taken in the distribution system in conjunction with total coliform monitoring under section 8.6 of this rule:

- (A) Number of instances where the residual disinfectant concentration is measured.
- (B) Number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured.
- (C) Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured.
- (D) Number of instances where no residual disinfectant concentration is detected and where HPC is greater than five hundred (500) per milliliter.
- (E) Number of instances where the residual disinfectant concentration is not measured and HPC is greater than five hundred (500) per milliliter.
- (F) For the current and previous month the system serves water to the public, the value of V in the following formula:

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click here to view equation.

Where:

- a = the value in clause (A)
- b = the value in clause (B)
- c = the value in clause (C)
- d = the value in clause (D)
- e = the value in clause (E)

(G) The commissioner may determine, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory within the requisite time and temperature conditions specified by section 8.7(3) of this rule and that the system is providing adequate disinfection in the distribution system, the requirements of clauses (A) through (F) do not apply.

(4) A system need not report the data listed in subdivision (1) if all data listed in subdivisions (1) through (3) remain on file at the system and the commissioner determines that the system has submitted all the information required by subdivisions (1) through (3) for at least twelve (12) months.

(d) Each system, upon discovering that a waterborne disease outbreak potentially attributable to that water system has occurred, must report that occurrence to the commissioner as soon as possible, but no later than by the end of the next business day. If at any time the turbidity exceeds five (5) NTU, the system must inform the commissioner as soon as possible, but no later than the end of the next business day. If at any time the residual falls below two-tenths (0.2) milligram per liter in the water entering the distribution system, the system must notify the commissioner as soon as possible, but no later than the end of the next business day. The system also must notify the commissioner by the end of the next business day whether or not the residual was restored to at least two-tenths (0.2) milligram per liter within four (4) hours. (*Water Pollution Control Board; 327 IAC 8-2-14; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1031; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2163*)

327 IAC 8-2-15 Failure to comply; maximum contaminant level, treatment technique, or variance schedule

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 15. (a) The owner or operator of a public water system which fails to comply with an applicable MCL or treatment technique established by this rule, or which fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, shall initially notify persons served by the system as follows, except as provided by subsection (d):

- (1) By publication in a daily newspaper of general circulation in the area served by the system as soon as possible, but in no case later

than fourteen (14) days after the violation or failure. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area.

(2) By mail delivery (by direct mail or with the water bill) or by hand delivery, not later than forty-five (45) days after the violation or failure. The commissioner may waive mail or hand delivery if it is determined that the owner or operator of the public water system in violation has corrected the violation or failure within the forty-five (45) day period. The commissioner must make the waiver in writing within the forty-five (45) day period.

(3) For violations of MCLs of contaminants that may pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the public water system as soon as possible, but in no case later than seventy-two (72) hours after the violation. The following are acute violations:

(A) Any violations specified by the commissioner as posing an acute risk to human health.

(B) Violations of the MCL for nitrate and/or nitrite as defined in section 4(a) of this rule and determined according to section 4.1(e) of this rule.

(C) Violation of the MCL for total coliforms, when fecal coliforms or E. coli are present in the water distribution system as specified in section 7(a) and 7(b) of this rule.

(b) Except as provided in subsection (c), following the initial notice given under subsection (a), the owner or operator of the public water system must give notice at least once every three (3) months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation or failure exists.

(c) In lieu of the requirements of subsections (a) and (b), the following apply:

(1) The owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice as soon as possible, but no later than seventy-two (72) hours after the violation or failure for acute violations (as defined in subsection (a)) or within fourteen (14) days after the violation or failure (for any other violation) by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three (3) months as long as the violation or failure exists.

(2) The owner or operator of a noncommunity water system may give notice as soon as possible, but no later than seventy-two (72) hours after the violation or failure for acute violations (as defined in subsection (a)) or within fourteen (14) days after the violation or failure (for any other violation) by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation or failure exists.

(d) The owner or operator of a public water system which fails to perform monitoring, fails to comply with a testing procedure established by this rule, or is subject to a variance or exemption under this rule, shall notify persons served by the system as follows:

(1) Except as provided in subdivision (3) or (4), the owner or operator of a public water system must give notice within three (3) months of the violation or the granting of a variance or exemption by publication in a daily newspaper of general circulation in the area served by the system. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall be given instead by publication in a weekly newspaper of general circulation serving the area.

(2) Except as provided in subdivision (3) or (4), following the initial notice given under subdivision (1), the owner or operator of the public water system must give notice at least once every three (3) months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists. Repeat notice of the existence of a variance or exemption must be given every three (3) months for as long as the variance or exemption remains in effect.

(3) In lieu of the requirements of subdivisions (1) and (2), the following apply:

(A) The owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice within three (3) months of the violation or granting of a variance or exemption by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation exists or as long as the variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation exists or the variance or exemption remains in effect.

(B) The owner or operator of a noncommunity water system may give notice within three (3) months of the violation or the granting of the variance or exemption by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation exists or the variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation exists or the variance or exemption remains in effect.

(4) In lieu of the requirements of subdivisions (1) through (3), the owner or operator of a public water system, at the discretion of the commissioner, may provide less frequent notice for minor monitoring violations as defined by the commissioner, if EPA has approved the commissioner's application for a program revision under 40 CFR 142.16. Notice of such violations must be given no less frequently than annually.

(e) The owner or operator of a community water system must give a copy of the most recent public notice for:

(1) any outstanding violation of any MCL;

- (2) any treatment technique requirement; or
- (3) any variance or exemption schedule;

to all new billing units or new hookups prior to or at the time service begins.

(f) Each notice required by this section must provide a clear and readily understandable explanation of the following:

- (1) The violation.
- (2) Any potential adverse health effects.
- (3) The population at risk.
- (4) The steps that the public water system is taking to correct the violation.
- (5) The necessity for seeking alternative water supplies, if any.
- (6) Any preventive measures the consumer should take until the violation is corrected.

Each notice shall be conspicuous and shall not contain unduly technical language, unduly small print, or similar problems that frustrate the purpose of the notice. Each notice shall include the telephone number of the owner, operator, or designee of the public water system as a source of additional information concerning the notice. Where appropriate, the notice shall be multilingual. (*Water Pollution Control Board; 327 IAC 8-2-15; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1032; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2164; filed Aug 24, 1994, 8:15 a.m.: 18 IR 45*)

327 IAC 8-2-16 Public notification; required language for inorganic contaminants

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 16. (a) When providing the information on potential adverse health effects required by section 15 of this rule in notices of:

- (1) violations of MCL or treatment technique requirements;
- (2) the granting or the continued existence of variances; or
- (3) failure to comply with a variance or exemption schedule;

the owner or operator of a public water system shall include the language specified in subsections (b) through (p) for each inorganic contaminant. (If language for a particular contaminant is not specified in subsections (b) through (p) at the time notice is required, this section does not apply.)

(b) Antimony. The water pollution control board has established drinking water standards and has determined that antimony is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in soils, ground water, and surface waters and is often used in the flame-retardant industry. It is also used in the manufacture of ceramics, glass, batteries, fireworks, and explosives. It may enter drinking water through the natural weathering of rock, industrial production, municipal waste disposal, or manufacturing processes. Antimony has been shown to decrease longevity and alter blood levels of cholesterol and glucose in laboratory animals, such as rats, when the animals are exposed to high levels during their life spans. The water pollution control board has set the drinking water standard for antimony at six-thousandths (0.006) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to antimony.

(c) Asbestos. The water pollution control board has established drinking water standards and has determined that asbestos fibers greater than ten (10) micrometers in length are a health concern at certain levels of exposure. Most asbestos fibers in drinking water are less than ten (10) micrometers in length and occur from natural sources and from corroded asbestos-cement pipes in the distribution system. The major uses of asbestos were in the production of cements, floor tiles, paper products, paint, caulking, textiles, and plastics and in transportation-related applications. Also, asbestos was once a popular insulating and fire-retardant material. Inhalation studies have shown that various forms of asbestos produced lung tumors in laboratory animals. The available information on the risk of developing gastrointestinal tract cancer associated with the ingestion of asbestos from drinking water is limited. However, ingestion of intermediate range chrysotile asbestos fibers greater than ten (10) micrometers in length is associated with causing benign tumors in male rats. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for asbestos at seven (7) million fibers greater than ten (10) micrometers in length per liter to reduce the potential risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to asbestos.

(d) Barium. The water pollution control board has established drinking water standards and has determined that barium is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in some aquifers that serve as sources of ground water and appears in drinking water after dissolving from naturally occurring minerals in the ground. Barium is used in oil and gas drilling muds, automotive paints, bricks, tiles, and aviation fuels. This chemical may damage the heart and cardiovascular system and is associated with high blood pressure in laboratory animals, such as rats, when the animals are exposed to high levels during their life spans. In humans, effects on blood pressure from barium in drinking water should not occur below two (2) milligrams per liter. Thus, the water pollution control board has set the drinking water standard for barium at two (2) milligrams per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to barium.

(e) Beryllium. The water pollution control board has established drinking water standards and has determined that beryllium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, ground water, and surface waters and is often used in electrical equipment and electrical components. Beryllium generally enters drinking water from run-off from mining operations, discharge from processing plants, and disposal of waste improperly. Beryllium compounds have been associated with damage to the bones and lungs and with induction of cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. There is limited evidence to suggest that beryllium may pose a cancer risk via drinking water exposure. Therefore, the health assessment is based on noncancer effects with an extra uncertainty factor to account for possible carcinogenicity. The water pollution control board has set the drinking water standard for beryllium at four-thousandths (0.004) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to beryllium.

(f) Cadmium. The water pollution control board has established drinking water standards and has determined that cadmium is a health concern at certain levels of exposure. Food consumption and cigarette smoking are common sources of general exposure. This inorganic metal is a contaminant in the metals used to galvanize pipe, and it generally enters drinking water by corrosion of the pipes or by improper waste disposal. Cadmium has been shown to damage the renal system in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the kidneys. The water pollution control board has set the drinking water standard for cadmium at five-thousandths (0.005) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to cadmium.

(g) Chromium. The water pollution control board has established drinking water standards and has determined that chromium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in the ground and is often used in metal electroplating. Chromium generally enters drinking water through run-off from old mining operations and improper waste disposal from plating operations. Chromium has been shown to damage the renal system, nervous system, and circulatory system of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some humans who were exposed to high levels of chromium suffered liver and kidney damage, dermatitis, and respiratory problems. The water pollution control board has set the drinking water standard for chromium at one-tenth (0.1) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to chromium.

(h) Copper. The water pollution control board has established drinking water standards and has determined that copper is a health concern at certain exposure levels. Copper, a reddish brown metal, is often used to plumb residential and commercial structures that are connected to water distribution systems. Copper generally contaminates drinking water as a corrosion byproduct and occurs as a result of the corrosion of copper pipes that remain in contact with water for a prolonged period of time. Copper is an essential nutrient, but at high doses it can cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at higher risk than the general public from exposure. The water pollution control board's drinking water regulations require all public water systems to install optimal corrosion control to minimize copper contamination resulting from the corrosion of plumbing materials. Public water systems servicing fifty thousand (50,000) people or fewer that have copper concentrations below one and three-tenths (1.3) parts per million in more than ninety percent (90%) of tap water samples (the action level) are not required to install or improve their treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove copper from source water is needed. Drinking water that meets these standards is associated with little or no risk and is considered safe with respect to copper.

(i) Cyanide. The water pollution control board has established drinking water standards and has determined that cyanide is a health concern at certain levels of exposure. This inorganic chemical is used in metal electroplating, steel processing, and in plastics, synthetic fabrics, and fertilizer products. Cyanide usually enters drinking water as a result of improper waste disposal. Cyanide has been shown to damage the spleen, brain, and liver of humans fatally poisoned with this chemical. The water pollution control board has set the drinking water standard for cyanide at two-tenths (0.2) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to cyanide.

(j) Fluoride. The water pollution control board has established drinking water standards and has determined that fluoride is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in some aquifers that serve as sources of ground water and appears in drinking water after dissolving from naturally occurring minerals in the ground. Fluoride in children's drinking water at levels of approximately one (1) milligram per liter reduces the number of dental cavities. However, some children exposed to levels of fluoride greater than approximately two (2) milligrams per liter may develop dental fluorosis. Dental fluorosis, in its moderate and severe forms, is a brown staining and/or pitting of the permanent teeth. Families with children under the age of nine (9) are encouraged to seek other sources of water for their children to avoid the possibility of staining and pitting. Because dental fluorosis occurs only when developing teeth are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. In adults, exposure to a contaminant level of greater than four (4) milligrams per liter for many years may result, in some cases, of crippling skeletal fluorosis, a serious bone disorder. The water pollution control board has set the drinking water standard for fluoride

at four (4) milligrams per liter to protect against the risk of adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to fluoride.

(k) Lead. The water pollution control board has established drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials containing lead frequently have been used in the construction of water supply distribution systems and plumbing systems in private homes and other buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. The lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes in contact with these materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include:

- (1) interference with red blood cell chemistry;
- (2) delays in normal physical and mental development in infants and young children;
- (3) slight deficits in the attention span, hearing, and learning abilities of children; and
- (4) slight increases in the blood pressure of adults.

The water pollution control board's drinking water regulations require all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving fifty thousand (50,000) persons or fewer that have lead concentrations below fifteen (15) parts per billion in more than ninety percent (90%) of tap water samples (the action level) have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor its source water to determine whether treatment to remove lead in source water is needed. Further, any water system that continues to exceed the action level after installation of corrosion control or source water treatment, or both, must eventually replace all lead service lines contributing in excess of fifteen (15) parts per billion of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water. Drinking water that meets these regulations is associated with little or no risk and should be considered safe with respect to lead.

(l) Mercury. The water pollution control board has established drinking water standards and has determined that mercury is a health concern at certain levels of exposure. This inorganic metal is used in electrical equipment and some water pumps. Mercury usually enters drinking water as a result of improper waste disposal. Mercury has been shown to damage the renal system of laboratory animals, such as rats, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for mercury at two-thousandths (0.002) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to mercury.

(m) Nitrate. The water pollution control board has established drinking water standards and has determined that nitrate poses an acute health concern at certain levels of exposure. Nitrate is used in fertilizer and is found in sewage and wastes from human and/or farm animals and generally enters drinking water from those activities. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death in infants under six (6) months of age. It is caused because nitrate is converted to nitrite in the body, and nitrite interferes with the oxygen carrying capacity of the infant's blood. This illness is acute in that symptoms can develop rapidly in infants; in most cases, the infant's health deteriorates over a period of days. Symptoms of the illness include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and state health authorities are the best source for information concerning alternate sources of drinking water. The water pollution control board has set the drinking water standard at ten (10) milligrams per liter for nitrate to protect against the risk of these adverse effects. The water pollution control board also has set a drinking water standard for nitrite at one (1) milligram per liter. To allow for the fact that the toxicity of nitrate and nitrite are additive, the water pollution control board also has established a standard for the sum of nitrate and nitrite at ten (10) milligrams per liter. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to nitrate.

(n) Nitrite. The water pollution control board has established drinking water standards and has determined that nitrite poses an acute health concern at certain levels of exposure. This inorganic chemical is used in fertilizers and is found in sewage and wastes from humans and/or farm animals and generally enters drinking water as a result of those activities. While excessive levels of nitrite in drinking water have not been observed, other sources of nitrite have caused serious illness and sometimes death in infants under six (6) months of age. It is caused because nitrite interferes with the oxygen carrying capacity of the infant's blood. This illness is acute in that symptoms can develop rapidly in infants; in most cases, the infant's health deteriorates over a period of days. Symptoms of the illness include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and state health authorities are the best source for information concerning alternate sources of drinking water. The water pollution control board has set the drinking water standard at one (1) milligram per liter for nitrite to protect against the risk of these adverse effects. The water pollution control board also has set a drinking water standard for nitrate (converted to nitrite in humans) at ten (10) milligrams per liter and for the sum of nitrate and nitrite at ten (10) milligrams per liter. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to nitrite.

(o) Selenium. The water pollution control board has established drinking water standards and has determined that selenium is a health concern at certain high levels of exposure. Notwithstanding, selenium is an essential nutrient at low levels of exposure. This inorganic chemical is found naturally in food and soils and is used in electronics, photocopy operations, glass, chemical and drug manufacture, and as a fungicide and feed additive. In humans, exposure to high levels of selenium over a long period of time has resulted in a number of adverse health effects, including a loss of feeling and control in the arms and legs. The water pollution control board has set the drinking water standard for selenium at five-hundredths (0.05) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to selenium.

(p) Thallium. The water pollution control board has established drinking water standards and has determined that thallium is a health concern at certain high levels of exposure. This inorganic metal is found naturally in soils and is used in electronics, pharmaceuticals, and the manufacture of glass and alloys. Thallium has been shown to damage the kidneys, liver, brain, and intestines of laboratory animals when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for thallium at two-thousandths (0.002) of a milligram per liter to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to thallium.

(q) The commissioner may give notice to the public as required by this section on behalf of the owner or operator of the public water system if the commissioner complies with the requirements of this section. However, the owner or operator of the public water system remains legally responsible for ensuring that the requirements of this section are met. (*Water Pollution Control Board; 327 IAC 8-2-16; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1033; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 47; filed Aug 25, 1997, 8:00 a.m.: 21 IR 55*)

327 IAC 8-2-17 Public notification; required language for organic contaminants

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 17. When providing the information on potential adverse health effects required by section 15(f) of this rule in notices of violations of MCL or treatment technique requirements, in notices of the granting or the continued existence of variances or exemptions, in notices of failure to comply with a variance or exemption schedule, the owner or operator of a public water system shall include the language specified as follows for each organic contaminant (If language for a particular contaminant is not specified in this section at the time notice is required, this section does not apply.):

(1) Acrylamide. The water pollution control board has established drinking water standards and has determined that acrylamide is a health concern at certain levels of exposure. Acrylamide has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time; sufficiently large doses of acrylamide are known to cause neurological injury. The water pollution control board has set the drinking water standard for acrylamide using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. As polymers made from acrylamide are sometimes used to treat water supplies to remove particulate contaminants, this treatment technique limits the amount of acrylamide in the polymer which may be added to drinking water. Drinking water systems which comply with this treatment technique have little or no risk and are considered safe with respect to acrylamide.

(2) Alachlor. The water pollution control board has established drinking water standards and has determined that alachlor is a health concern at certain levels of exposure. This organic chemical is a widely used pesticide. When soil and climatic conditions are favorable, alachlor may enter drinking water by run-off into surface water or by leaching into ground water. Alachlor has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for alachlor at two (2) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to alachlor.

(3) Atrazine. The water pollution control board has established drinking water standards and has determined that atrazine is a health concern at certain levels of exposure. This organic chemical is an herbicide. When soil and climatic conditions are favorable, atrazine may enter drinking water by run-off into surface water or by leaching into ground water. Atrazine has been shown to affect the offspring of rats and the hearts of dogs when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for atrazine at three (3) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to atrazine.

(4) Benzene. The water pollution control board has established drinking water standards and has determined that benzene is a health concern at certain levels of exposure. Benzene is used as a solvent and degreaser of metals; also, it is a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum storage tanks or by improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical also has been shown to cause cancer

in laboratory animals when the animals are exposed to high levels over their life spans. Chemicals that cause an increased risk of cancer among exposed industrial workers and laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. The water pollution control board has set the drinking water standard for benzene at five (5) parts per billion to reduce the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to benzene.

(5) Benzo[a]pyrene. The water pollution control board has established drinking water standards and has determined that benzo[a]pyrene is a health concern at certain levels of exposure. Cigarette smoke and charbroiled meats are common sources of general exposure. The major source of benzo[a]pyrene in drinking water occurs from the leaching from coal tar lining and sealants in water storage tanks. Benzo[a]pyrene has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for benzo[a]pyrene at two-tenths (0.2) of a part per billion to protect against the risk of cancer. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to benzo[a]pyrene.

(6) Carbofuran. The water pollution control board has established drinking water standards and has determined that carbofuran is a health concern at certain levels of exposure. This organic chemical is a pesticide. When soil and climatic conditions are favorable, carbofuran may enter drinking water by run-off into surface water or by leaching into ground water. Carbofuran has been shown to damage the nervous and reproductive systems of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some humans who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. Notwithstanding, the effects on the nervous system are generally rapidly reversible. The water pollution control board has set the drinking water standard for carbofuran at forty (40) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to carbofuran.

(7) Carbon tetrachloride. The water pollution control board has established drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once used as a popular household cleaning fluid, and it generally enters drinking water by improper waste disposal. Carbon tetrachloride has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. The water pollution control board has set the drinking water standard for carbon tetrachloride at five (5) parts per billion to reduce the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to carbon tetrachloride.

(8) Chlordane. The water pollution control board has established drinking water standards and has determined that chlordane is a health concern at certain levels of exposure. This organic chemical is a pesticide used to control termites, and it is not very mobile in soils. Chlordane usually enters drinking water after application near water supply intakes or wells. Chlordane has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for chlordane at two (2) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to chlordane.

(9) Dalapon. The water pollution control board has established drinking water standards and has determined that dalapon is a health concern at certain levels of exposure. This organic chemical is a widely used herbicide. Dalapon may enter drinking water after application to control grasses in crops, drainage ditches, and along railroads. Dalapon has been shown to cause damage to the liver and kidneys in laboratory animals when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for dalapon at two hundred (200) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to dalapon.

(10) 1,2-dibromo-3-chloropropane (DBCP). The water pollution control board has established drinking water standards and has determined that DBCP is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, DBCP may enter drinking water by run-off into surface water or by leaching into ground water. DBCP has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for DBCP at two-tenths (0.2) of a part per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to DBCP.

(11) ortho-Dichlorobenzene (o-dichlorobenzene). The water pollution control board has established drinking water standards and has determined that o-dichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent in the production of pesticides and dyes. O-dichlorobenzene generally enters water by improper waste disposal; it has been shown

to damage the liver, kidneys, and blood cells of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, nervous system, and circulatory system. The water pollution control board has set the drinking water standard for o-dichlorobenzene at six hundred (600) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to o-dichlorobenzene.

(12) para-Dichlorobenzene. The water pollution control board has established drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizers, moth balls, and pesticides, and it generally enters drinking water by improper waste disposal. Para-dichlorobenzene has been shown to cause liver and kidney damage in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals which cause adverse health effects in laboratory animals may also cause adverse health effects in humans who are exposed at lower levels over longer periods of time. The water pollution control board has set the drinking water standard for para-dichlorobenzene at seventy-five (75) parts per billion to reduce the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to para-dichlorobenzene.

(13) 1,2-Dichloroethane. The water pollution control board has established drinking water standards and has determined that 1,2-dichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaning fluid for fats, oils, waxes, and resins. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. The water pollution control board has set the drinking water standard for 1,2-dichloroethane at five (5) parts per billion to reduce the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to 1,2-dichloroethane.

(14) 1,1-Dichloroethylene. The water pollution control board has established drinking water standards and has determined that 1,1-dichloroethylene is a health concern at certain levels of exposure. This chemical, used in industrial solvents that clean and degrease metals, enters drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. The water pollution control board has set the drinking water standard for 1,1-dichloroethylene at seven (7) parts per billion to reduce the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to 1,1-dichloroethylene.

(15) cis-1,2-Dichloroethylene. The water pollution control board has established drinking water standards and has determined that cis-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and an intermediate in chemical production. Cis-1,2-dichloroethylene generally enters water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. The water pollution control board has set the drinking water standard for cis-1,2-dichloroethylene at seventy (70) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to cis-1,2-dichloroethylene.

(16) trans-1,2-Dichloroethylene. The water pollution control board has established drinking water standards and has determined that trans-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and an intermediate in chemical production. Trans-1,2-dichloroethylene generally enters drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. The water pollution control board has set the drinking water standard for trans-1,2-dichloroethylene at one hundred (100) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to trans-1,2-dichloroethylene.

(17) Dichloromethane. The water pollution control board has established drinking water standards and has determined that dichloromethane (methylene chloride) is a health concern at certain levels of exposure. This organic chemical is a widely used solvent, and it also is used in the manufacture of paint remover, metal degreaser, and aerosol propellant. Dichloromethane generally enters drinking water after improper discharge of waste. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for dichloromethane at five (5) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to dichloromethane.

(18) 2,4-Dichlorophenoxyacetic acid (2,4-D). The water pollution control board has established drinking water standards and has determined that 2,4-D is a health concern at certain levels of exposure. This organic chemical is used as a herbicide and an algae

control in reservoirs. When soil and climatic conditions are favorable, 2,4-D may enter drinking water by run-off into surface water or by leaching into ground water. This chemical has been shown to damage the liver and kidneys of laboratory animals, such as rats, when the animals are exposed to high levels during their life spans. Some humans who were exposed to relatively large amounts of 2,4-D also suffered damage to the nervous system. The water pollution control board has set the drinking water standard for 2,4-D at seventy (70) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to 2,4-D.

(19) 1,2-Dichloropropane. The water pollution control board has established drinking water standards and has determined that 1,2-dichloropropane is a health concern at certain levels of exposure. This organic chemical is used as a solvent and a pesticide. When soil and climatic conditions are favorable, 1,2-dichloropropane generally enters drinking water by run-off into surface water, by leaching into ground water, or through improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for 1,2-dichloropropane at five (5) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to 1,2-dichloropropane.

(20) Di(2-ethylhexyl)adipate. The water pollution control board has established drinking water standards and has determined that di(2-ethylhexyl)adipate is a health concern at certain levels of exposure. This chemical is a widely used plasticizer in a variety of products, including synthetic rubber, food packaging materials, and cosmetics. Di(2-ethylhexyl)adipate may enter drinking water through improper waste disposal, and this chemical has been shown to damage the liver and testes in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for di(2-ethylhexyl)adipate at four hundred (400) parts per billion to protect against the risk of adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to di(2-ethylhexyl)adipate.

(21) Di(2-ethylhexyl)phthalate. The water pollution control board has established drinking water standards and has determined that di(2-ethylhexyl)phthalate is a health concern at certain levels of exposure. This chemical is a widely used plasticizer, primarily used in the production of polyvinyl chloride (PVC) resins. Di(2-ethylhexyl)phthalate may enter drinking water through improper waste disposal, and this chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for di(2-ethylhexyl)phthalate at six (6) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to di(2-ethylhexyl)phthalate.

(22) Dinoseb. The water pollution control board has established drinking water standards and has determined that dinoseb is a health concern at certain levels of exposure. Dinoseb is a widely used pesticide, and it generally enters drinking water after application on orchards, vineyards, and other crops. This chemical has been shown to damage the thyroid and reproductive organs in laboratory animals, such as rats, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for dinoseb at seven (7) parts per billion to protect against the risk of adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to dinoseb.

(23) Diquat. The water pollution control board has established drinking water standards and has determined that diquat is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. Diquat may enter drinking water by run-off into surface water. This chemical has been shown to damage the liver, kidneys, and gastrointestinal tract and to cause cataract formation in laboratory animals, such as dogs and rats, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for diquat at twenty (20) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to diquat.

(24) Endothall. The water pollution control board has established drinking water standards and has determined that endothall is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. Endothall may enter drinking water by run-off into surface water. This chemical has been shown to damage the liver, kidneys, gastrointestinal tract, and reproductive system of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for endothall at one hundred (100) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to endothall.

(25) Endrin. The water pollution control board has established drinking water standards and has determined that endrin is a health concern at certain levels of exposure. This organic chemical is a pesticide no longer registered for use in the United States. However, endrin persists in treated soils due to accumulation in sediments and aquatic and terrestrial biota. Endrin has been shown to damage the liver, kidneys, and heart in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for endrin at two (2) parts per billion to protect against

the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to endrin.

(26) Epichlorohydrin. The water pollution control board has established drinking water standards and has determined that epichlorohydrin is a health concern at certain levels of exposure. Polymers made from epichlorohydrin are sometimes used in the treatment of water supplies as a flocculent to remove particulates. Epichlorohydrin generally enters drinking water by improper use of these polymers. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for epichlorohydrin using a treatment technique to reduce the risk of cancer or other adverse health effects. This treatment technique limits the amount of epichlorohydrin in the polymer and the amount of the polymer which may be added to drinking water to remove particulates. Drinking water systems which comply with this treatment technique have little or no risk and are considered safe with respect to epichlorohydrin.

(27) Ethylbenzene. The water pollution control board has established drinking water standards and has determined that ethylbenzene is a health concern at certain levels of exposure. This organic chemical is a major component of gasoline. Ethylbenzene generally enters drinking water through improper waste disposal or from leaking gasoline storage tanks. This chemical has been shown to damage the kidneys, liver, and nervous system of laboratory animals, such as rats, when the animals are exposed to high levels during their life spans. The water pollution control board has set the drinking water standard for ethylbenzene at seven hundred (700) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to ethylbenzene.

(28) Ethylene dibromide (EDB). The water pollution control board has established drinking water standards and has determined that EDB is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, EDB enters drinking water by run-off into surface water or by leaching into ground water. EDB has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard of EDB at five-hundredths (0.05) of a part per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to EDB.

(29) Glyphosate. The water pollution control board has established drinking water standards and has determined that glyphosate is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control grasses and weeds. Glyphosate may enter drinking water by run-off into surface water. Glyphosate has been shown to cause damage to the liver and kidneys in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for glyphosate at seven hundred (700) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to glyphosate.

(30) Heptachlor. The water pollution control board has established drinking water standards and has determined that heptachlor is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor may enter drinking water by run-off into surface water or by leaching into ground water. Heptachlor has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for heptachlor at four-tenths (0.4) of a part per billion to protect against the risk of cancer and other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to heptachlor.

(31) Heptachlor epoxide. The water pollution control board has established drinking water standards and has determined that heptachlor epoxide is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor epoxide may enter drinking water by run-off into surface water or by leaching into ground water. Heptachlor epoxide has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for heptachlor epoxide at two-tenths (0.2) of a part per billion to protect against the risk of cancer and other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to heptachlor epoxide.

(32) Hexachlorobenzene. The water pollution control board has established drinking water standards and has determined that hexachlorobenzene is a health concern at certain levels of exposure. This organic chemical is produced as an impurity in the manufacture of certain solvents and pesticides. Hexachlorobenzene has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Chemicals that cause cancer in laboratory animals

also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for hexachlorobenzene at one (1) part per billion to protect against the risk of cancer and other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to hexachlorobenzene.

(33) Hexachlorocyclopentadiene. The water pollution control board has established drinking water standards and has determined that hexachlorocyclopentadiene is a health concern at certain levels of exposure. This organic chemical is produced as an intermediate in the manufacture of pesticides and flame retardants. Hexachlorocyclopentadiene may enter drinking water through discharge from production facilities. This chemical has been shown to damage the kidneys and stomach of laboratory animals when they are exposed to high levels during their life spans. The water pollution control board has set the drinking water standard for hexachlorocyclopentadiene at fifty (50) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to hexachlorocyclopentadiene.

(34) Lindane. The water pollution control board has established drinking water standards and has determined that lindane is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, lindane may enter drinking water by run-off into surface water or by leaching into ground water. Lindane has been shown to damage the liver, kidneys, and nervous and immune systems of laboratory animals, such as rats, mice, and dogs, when the animals are exposed to high levels during their life spans. Also, it has been shown to produce growth retardation in rats. The water pollution control board has set the drinking water standard for lindane at two-tenths (0.2) of a part per billion to protect against the risk of cancer and other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to lindane.

(35) Methoxychlor. The water pollution control board has established drinking water standards and has determined that methoxychlor is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, methoxychlor may enter drinking water by run-off into surface water or by leaching into ground water. Methoxychlor has been shown to damage the liver, kidneys, and nervous and reproductive systems of laboratory animals, such as rats, when the animals are exposed to high levels during their life spans. Also, it has been shown to produce growth retardation in rats. The water pollution control board has set the drinking water standard for methoxychlor at forty (40) parts per billion to protect against the risk of cancer and other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to methoxychlor.

(36) Monochlorobenzene. The water pollution control board has established drinking water standards and has determined that monochlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent, and it generally enters drinking water through improper waste disposal. This chemical has been shown to damage the liver, kidneys, and nervous system of laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. The water pollution control board has set the drinking water standard for monochlorobenzene at one hundred (100) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to monochlorobenzene.

(37) Oxamyl. The water pollution control board has established drinking water standards and has determined that oxamyl is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for the control of insects and other pests and generally enters drinking water by run-off into surface water or leaching into ground water. Oxamyl has been shown to damage the kidneys of laboratory animals, such as rats, when they are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for oxamyl at two hundred (200) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to oxamyl.

(38) Pentachlorophenol. The water pollution control board has established drinking water standards and has determined that pentachlorophenol is a health concern at certain levels of exposure. This organic chemical is used as a wood preservative, herbicide, disinfectant, and defoliant. Pentachlorophenol generally enters drinking water by run-off into surface water or leaching into ground water. This chemical has been shown to produce adverse reproductive effects and to damage the liver and kidneys of laboratory animals, such as rats, when they are exposed to high levels during their life spans. Similarly, some humans who were exposed to relatively large amounts of this chemical also suffered damage to the liver and kidneys. Pentachlorophenol has also been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for pentachlorophenol at one (1) part per billion to protect against the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to pentachlorophenol.

(39) Picloram. The water pollution control board has established drinking water standards and has determined that picloram is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for broadleaf weed control. Picloram may enter drinking water by run-off into surface water or leaching into ground water as a result of pesticide application and improper waste

disposal. Picloram has been shown to cause damage to the kidneys and liver in laboratory animals, such as rats, when they are exposed to high levels over their life spans. The water pollution control board has set the drinking water standard for picloram at five hundred (500) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to picloram.

(40) Polychlorinated biphenyls (PCBs). The water pollution control board has established drinking water standards and has determined that PCBs are a health concern at certain levels of exposure. These organic chemicals were once widely used in electrical transformers and other industrial equipment. PCBs generally enter drinking water through improper waste disposal or leaking electrical or industrial equipment. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for PCBs at five-tenths (0.5) of a part per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to PCBs.

(41) Simazine. The water pollution control board has established drinking water standards and has determined that simazine is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control annual grasses and broadleaf weeds. After application, simazine may enter drinking water by run-off into surface water or leaching into ground water. Simazine may cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for simazine at four (4) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to simazine.

(42) Styrene. The water pollution control board has established drinking water standards and has determined that styrene is a health concern at certain levels of exposure. This organic chemical commonly is used to make plastics and sometimes is used as a component for drinking water treatment. Styrene may enter drinking water from improper waste disposal. This chemical has been shown to damage the liver and nervous system in laboratory animals when they are exposed to high levels during their life spans. The water pollution control board has set the drinking water standard for styrene at one hundred (100) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to styrene.

(43) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) (dioxin). The water pollution control board has established drinking water standards and has determined that dioxin is a health concern at certain levels of exposure. This organic chemical is an impurity in the production of some pesticides, and it enters drinking water by industrial discharge of wastes. Dioxin has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for dioxin at three-hundred thousandths (0.0003) of a part per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to dioxin.

(44) Tetrachloroethylene. The water pollution control board has established drinking water standards and has determined that tetrachloroethylene is a health concern at certain levels of exposure. This organic chemical has been a popular solvent, particularly for dry cleaning, and it generally enters drinking water through improper waste disposal. Tetrachloroethylene has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for tetrachloroethylene at five (5) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to tetrachloroethylene.

(45) Toluene. The water pollution control board has established drinking water standards and has determined that toluene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and in the manufacture of aviation fuel. Toluene generally enters drinking water by improper waste disposal or leaking underground storage tanks. Toluene has been shown to damage the kidneys, nervous system, and circulatory system of laboratory animals, such as rats and mice, when the animals are exposed to high levels during their life spans. Some industrial workers who were exposed to relatively large amounts of toluene during their working careers also suffered damage to the liver, kidneys, and nervous system. The water pollution control board has set the drinking water standard for toluene at one thousand (1,000) parts per billion to protect against the risk of adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to toluene.

(46) Toxaphene. The water pollution control board has established drinking water standards and has determined that toxaphene is a health concern at certain levels of exposure. This organic chemical was once a pesticide widely used on cotton, corn, soybeans, pineapples, and other crops. When soil and climatic conditions are favorable, toxaphene may enter drinking water by run-off into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals, such as rats and

mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. The water pollution control board has set the drinking water standard for toxaphene at three (3) parts per billion to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to toxaphene.

(47) 1,2,4-Trichlorobenzene. The water pollution control board has established drinking water standards and has determined that 1,2,4-trichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a dye carrier and as a precursor in herbicide manufacture, and it generally enters drinking water by discharges from industrial activities. This chemical has been shown to cause damage to several organs, including the adrenal glands. The water pollution control board has set the drinking water standard for 1,2,4-trichlorobenzene at seventy (70) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to 1,2,4-trichlorobenzene.

(48) 1,1,1-Trichloroethane. The water pollution control board has established drinking water standards and has determined that 1,1,1-trichloroethane is a health concern at certain levels of exposure. This chemical is used to clean and degrease metals, and generally enters drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers suffered damage to the liver, nervous system, and circulatory system. Chemicals which cause adverse health effects among exposed laboratory animals and industrial workers also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. The water pollution control board has set the drinking water standard for 1,1,1-trichloroethane at two hundred (200) parts per billion to protect against the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to 1,1,1-trichloroethane.

(49) 1,1,2-Trichloroethane. The water pollution control board has established drinking water standards and has determined 1,1,2-trichloroethane is a health concern at certain levels of exposure. This organic chemical is an intermediate in the production of 1,1-dichloroethylene, and it generally enters drinking water through the discharge of industrial wastes. This chemical has been shown to damage the kidneys and liver of laboratory animals, such as rats, when they are exposed to high levels during their life spans. The water pollution control board has set the drinking water standard for 1,1,2-trichloroethane at five (5) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and should be considered safe with respect to 1,1,2-trichloroethane.

(50) Trichloroethylene. The water pollution control board has established drinking water standards and has determined that trichloroethylene is a health concern at certain levels of exposure. This chemical is a common metal cleaning and dry cleaning fluid, and it enters drinking water through improper waste disposal. Trichloroethylene has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their life spans. Chemicals that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed at lower levels over long periods of time. The water pollution control board has set the drinking water standard for trichloroethylene at five (5) parts per billion to reduce the risk of cancer or other adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to trichloroethylene.

(51) 2,4,5-Trichloro-phenoxy-propionic acid (2,4,5-TP) (silvex). The water pollution control board has established drinking water standards and has determined that 2,4,5-TP is a health concern at certain levels of exposure. This organic chemical is used as a herbicide. When soil and climatic conditions are favorable, 2,4,5-TP may enter drinking water by run-off into surface water or by leaching into ground water. This chemical has been shown to damage the liver and kidneys of laboratory animals, such as rats and dogs, when the animals are exposed to high levels during their life spans. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. The water pollution control board has set the drinking water standard for 2,4,5-TP at fifty (50) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to 2,4,5-TP.

(52) Vinyl chloride. The water pollution control board has established drinking water standards and has determined that vinyl chloride is a health concern at certain levels of exposure. Vinyl chloride, used in industrial solvents that clean and degrease metals, enters drinking water by improper waste disposal. Vinyl chloride has been associated with an increased risk of cancer among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical also has been shown to cause cancer in humans who are exposed to lower levels over long periods of time. The water pollution control board has set the drinking water standard for vinyl chloride at two (2) parts per billion to reduce the risk of these adverse health effects. Drinking water which meets this standard is associated with little or no risk and should be considered safe with respect to vinyl chloride.

(53) Xylenes. The water pollution control board has established drinking water standards and has determined that xylenes are a health concern at certain levels of exposure. This organic chemical is used in the manufacture of aviation fuel, quartz crystal oscillators,

perfumes, and insect repellents, as solvent for paints, lacquers, varnishes, inks, dyes, and adhesives, and as a cleaner and degreaser of metals. Xylenes usually enter drinking water through improper waste disposal. Xylenes have been shown to damage the liver, kidneys, and nervous system of laboratory animals, such as rats and dogs, when the animals were exposed to high levels during their life spans. Some humans who were exposed to relatively large amounts of xylenes also suffered damage to the nervous system. The water pollution control board has set the drinking water standard for xylenes at ten thousand (10,000) parts per billion to protect against the risk of these adverse health effects. Drinking water that meets this standard is associated with little or no risk and is considered safe with respect to xylenes.

(Water Pollution Control Board; 327 IAC 8-2-17; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1034; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; filed Aug 24, 1994, 8:15 a.m.: 18 IR 51; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532; errata filed Mar 9, 1995, 4:15 p.m.: 18 IR 1836; filed Aug 25, 1997, 8:00 a.m.: 21 IR 58)

327 IAC 8-2-18 Public notification; required language for microbiological contaminants

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 18. (a) When providing the information on potential adverse health effects required by section 15(f) of this rule in notices of violations of MCLs for treatment technique requirements, in notices of the granting or the continued existence of variances, or in notices of failure to comply with a variance schedule, the owner or operator of a public water system shall include the language specified as follows for each microbiological contaminant (If language for a particular contaminant is not specified below at the time notice is required, this section does not apply.):

(1) This subdivision concerning total coliforms is for use when there is a violation of section 7(a) of this rule and not a violation of section 7(b) of this rule. The Indiana department of environmental management sets drinking water standards and has determined that the presence of total coliforms is possibly a health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. The Indiana department of environmental management has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under the standard, no more than five percent (5%) of the samples collected during a month can contain these bacteria, except that systems collecting fewer than forty (40) samples per month that have one (1) total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

(2) This subdivision concerning fecal coliforms or *E. coli* is for use when there is a violation of section 7(b) of this rule or section 7(a) and 7(b) of this rule. The Indiana department of environmental management sets drinking water standards and has determined that the presence of fecal coliforms or *E. coli* is a serious health concern. Fecal coliforms and *E. coli* are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. The Indiana department of environmental management has set an enforceable drinking water standard for fecal coliforms and *E. coli* to reduce the risk of these adverse health effects. Under this standard all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. State and local health authorities recommend that consumers take the following precautions: (to be inserted by the public water system, according to instructions from state or local authorities).

(3) This subdivision concerning microbiological contaminants is for use when there is a violation of the treatment technique requirements for filtration and disinfection. The Indiana department of environmental management sets drinking water standards and has determined that the presence of microbiological contaminants is a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. The Indiana department of environmental management has set enforceable requirements for treating drinking water to reduce the risk of these adverse health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants. Drinking water which is treated to meet Indiana department of environmental management requirements is associated with little to none of this risk and should be considered safe.

(b) The commissioner may give notice to the public required by this section on behalf of the owner or operator of the public water

system if the commissioner complies with the requirements of this section. However, the owner or operator of the public water system remains legally responsible for ensuring that the requirements of this section are met. (*Water Pollution Control Board; 327 IAC 8-2-18; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1036; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2166*)

327 IAC 8-2-19 Public notification requirements pertaining to lead

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 19. (a) Except as provided in subsection (c), by June 19, 1988, the owner or operator of each community water system and each nontransient, noncommunity water system shall issue notice to persons served by the system that may be affected by lead contamination of their drinking water.

(b) The commissioner may require subsequent notices. The owner or operator shall provide notice under this section even if there is no violation of the MCL for lead.

(c) Notice under subsection (a) is not required if the system demonstrates to the commissioner that the water system, including the residential and nonresidential portions connected to the water system, are lead free. For purposes of this section, the term "lead free" when used with respect to solders and flux refers to solders and flux containing not more than two-tenths percent (0.2%) lead, and when used with respect to pipes and pipe fittings refers to pipes and pipe fittings containing not more than eight percent (8%) lead.

(d) Notice shall be given to persons served by the system by:

(1) three (3) newspaper notices, one (1) for each of three (3) consecutive months and the first no later than June 19, 1988;

(2) the water bill or in a separate mailing by June 19, 1988; or

(3) once by hand delivery by June 19, 1988.

(e) For nontransient noncommunity water systems, notice may be given by continuous posting. If posting is used, the notice shall be posted in a conspicuous place in the area served by the system and start no later than June 19, 1988, and continue for three (3) months.

(f) Notices issued under this section shall include the following:

(1) Provide a clear and readily understandable explanation of the potential sources of lead in drinking water, potential adverse health effects, reasonably available methods of mitigating known or potential lead content in drinking water, any steps the water system is taking to mitigate lead content in drinking water, and the necessity for seeking alternative water supplies, if any. Use of the mandatory language in subsection (h) in the notice will be sufficient to explain potential adverse health effects.

(2) Include specific advice on how to determine if materials containing lead have been used in homes or the water distribution system, and how to minimize exposure to water likely to contain high levels of lead. Each notice shall be conspicuous and shall not contain unduly technical language, unduly small print, or similar problems that frustrate the purpose of the notice. Each notice shall contain the telephone number of the owner, operator, or designee of the public water system as a source of additional information regarding the notice. Where appropriate, the notice shall be multilingual.

(g) Optional information to be given may be that each notice should advise persons served by the system to use only the cold water faucet for drinking and for use in cooking or preparing baby formula, and to run the water until it gets as cold as it is going to get before each use. If there has recently been major water use in the household, such as showering or bathing, flushing toilets, or doing laundry with cold water, flushing the pipes should take five (5) to thirty (30) seconds; if not, flushing the pipes could take as long as several minutes. Each notice should also advise persons served by the system to check to see if lead pipes, solder, or flux have been used in plumbing that provides tap water and to ensure that new plumbing and plumbing repairs use lead free materials. The only way to be sure of the amount of lead in the household water is to have the water tested by a competent laboratory. Testing is especially important to apartment dwellers because flushing may not be effective in high-rise buildings that have lead-soldered central piping. As appropriate, the notice should provide information on testing.

(h) When providing the information in public notices required under subsection (f) on the potential adverse health effects of lead in drinking water, the owner or operator of the water system shall include the following specific language in the notice:

"The Indiana Department of Environmental Management sets drinking water standards and has determined that lead is a health concern at certain levels of exposure. There is currently a standard of 0.050 parts per million. Based on new health information, the Indiana Department of Environmental Management is likely to lower this standard significantly.

Part of the purpose of this notice is to inform you of the potential adverse health effects of lead. This is being done even though your water may not be in violation of the current standard.

Indiana Department of Environmental Management and others are concerned about lead in drinking water. Too much lead in the human body can cause serious damage to the brain, kidneys, nervous system, and red blood cells. The greatest risk, even with short-term exposure, is to young children and pregnant women.

Lead levels in your drinking water are likely to be highest:

- ! if your home or water system has lead pipes, or
- ! if your home has copper pipes with lead solder, and
- ! if the home is less than five years old, or

- ! if you have soft or acidic water, or
- ! if water sits in the pipes for several hours."

(i) The commissioner may give notice to the public required by this section on behalf of the owner or operator of the water system if the commissioner meets the requirements of subsection (d) and the notice contains all the information specified in subsections (f) and (h). However, the owner or operator of the water system remains legally responsible for ensuring that the requirements of this section are met. (*Water Pollution Control Board; 327 IAC 8-2-19; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1037; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258*)

327 IAC 8-2-20 Record maintenance

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5, IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 20. Any owner or operator of a public water system subject to the provisions of this rule shall retain on its premises or at a convenient location near its premises the following records:

(1) Records of bacteriological analyses made under this rule shall be kept for not less than five (5) years. Records of chemical and radiological analyses made under this rule shall be kept for not less than ten (10) years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:

- (A) The date, place, and time of sampling, and the name of the person who collected the sample.
- (B) Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water sample, or other special purpose sample.
- (C) Date of analysis.
- (D) Laboratory and person responsible for performing analysis.
- (E) The analytical technique/method used.
- (F) The results of the analysis.

(2) Records of action taken by the system to correct violations of this rule shall be kept for not less than three (3) years after the last action taken with respect to the particular violation involved.

(3) Copies of any written reports, summaries, or communications relating to sanitary surveys of the system conducted by the system itself, by a private consultant, or by any local, state, or federal agency, shall be kept for not less than ten (10) years after completion of the sanitary survey involved.

(4) Records concerning a variance granted to the system shall be kept for not less than five (5) years after the expiration of variance. (*Water Pollution Control Board; 327 IAC 8-2-20; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1038*)

327 IAC 8-2-21 Special monitoring for sodium

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 21. (a) Suppliers of water for community public water systems shall collect and analyze one (1) sample per treatment plant at the entry point of the distribution system for the determination of sodium concentration levels. Samples must be collected and analyzed annually for systems utilizing surface water sources in whole or in part, and at least every three (3) years for systems utilizing solely ground water sources. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the commissioner's approval, be considered one (1) treatment plant for determining the minimum number of samples. The supplier of water may be required by the commissioner to collect and analyze water samples for sodium more frequently in locations where the sodium content is variable.

(b) The supplier of water shall report to the commissioner the results of the analyses for sodium within the first ten (10) days of the month following the month in which the sample results were received or within the first ten (10) days following the end of the required monitoring period as stipulated by the commissioner, whichever of these is first. If more than annual sampling is required, the supplier shall report the average sodium concentration within ten (10) days of the month following the month in which the analytical result of the last sample used for the annual average was received.

(c) The supplier of water shall notify the commissioner and appropriate local public health officials of the sodium levels by written notice by direct mail within three (3) months. A copy of each notice required to be provided by this subsection shall be sent to the commissioner within ten (10) days of its issuance. The supplier of water is not required to notify the commissioner and appropriate local public health officials of the sodium levels where the commissioner provides such notices in lieu of the supplier.

(d) Analyses for sodium shall be performed by the following methods:

- (1) Inductively coupled plasma, Method 200.7*.
- (2) Atomic adsorption; direct aspiration, Method 3111B*.

*Methods referenced in this section may be obtained as follows:

- (1) Method 200.7 may be found in "Methods for the Determination of Metals in Environmental Samples-Supplement 1", EPA-600/R-

94-111, May 1994, which is available from NTIS, PB94-184942, PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(2) Method 3111B may be found in "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-21; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1039; filed Aug 25, 1997, 8:00 a.m.: 21 IR 68*)

327 IAC 8-2-22 Special monitoring for corrosivity characteristics and lead ban

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 22. (a) Community water supply systems shall identify whether the following construction materials are present in their piping, storage structures, pumps, and controls used to deliver water to the public, and report to the commissioner:

- (1) Lead from piping solder, caulking, interior lining of distribution mains, alloys, and home plumbing.
- (2) Copper from piping and alloys, service lines, and home plumbing.
- (3) Galvanized piping, service lines, and home plumbing.
- (4) Ferrous piping materials such as cast iron and steel.
- (5) Asbestos cement pipe.

(b) In addition, the commissioner may require identification and reporting of other construction materials present in their piping, storage structures, pumps, and controls used to deliver water to the public that may contribute contaminants to the drinking water, such as:

- (1) vinyl lined asbestos cement pipe;
- (2) coal tar lined pipes and tanks; and
- (3) solders, flux, pipes, and pipe fittings not in compliance with 675 IAC 16, the Indiana Plumbing Code.

(*Water Pollution Control Board; 327 IAC 8-2-22; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1039; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2259; filed Aug 25, 1997, 8:00 a.m.: 21 IR 68*)

327 IAC 8-2-23 Special monitoring for inorganic and organic contaminants

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 23. (a) All community and nontransient noncommunity water systems shall monitor for the contaminants listed in subsection (e) by the following dates:

Number of <u>Persons Served</u>	Monitoring to Begin <u>No Later Than</u>
Over 10,000	January 1, 1988
3,300 to 10,000	January 1, 1989
Less than 3,300	January 1, 1991

(b) Surface water systems shall sample at points in the distribution system representative of each water source or at entry points to the distribution system after any application of treatment. The minimum number of samples is one (1) year of quarterly samples per water source.

(c) Ground water systems shall sample at points of entry to the distribution system representative of each well after any application of treatment. The minimum number of samples is one (1) sample per entry point to the distribution system.

(d) The commissioner may require confirmation samples for positive or negative results.

(e) Community water systems and nontransient noncommunity water systems shall monitor for the following contaminants:

- (1) Chloroform.
- (2) Bromodichloromethane.
- (3) Chlorodibromomethane.
- (4) Bromoform.
- (5) Tribromomethane.
- (6) m-dichlorobenzene.
- (7) 1,1-dichloropropene.
- (8) 1,1-dichloroethane.
- (9) 1,1,2,2-tetrachloroethane.
- (10) 1,3-dichloropropane.

- (11) Chloromethane.
- (12) Bromomethane.
- (13) 1,2,3-trichloropropane.
- (14) 1,1,1,2-tetrachloroethane.
- (15) Chloroethane.
- (16) 2,2-dichloropropane.
- (17) o-chlorotoluene.
- (18) p-chlorotoluene.
- (19) Bromobenzene.
- (20) 1,3-dichloropropene.
- (21) Dibromomethane.

(f) Analysis under this section shall be conducted using the recommended EPA methods or their equivalent as determined by EPA:

- (1) 524.2*, "Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography/Mass Spectrometry".
- (2) 502.2*, "Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series".

(3) Analyses for bromodichloromethane, bromoform, chlorodibromomethane, and chloroform may be conducted by using Method 551*.

(4) Analysis for 1,2,3-trichloropropane may be conducted using Method 504.1*.

(g) Analysis under this section shall only be conducted by laboratories certified under section 5.6(b) of this rule.

(h) Public water systems may use monitoring data collected any time after January 1, 1988, to meet the requirements for unregulated monitoring in subsection (e), provided that the monitoring program was consistent with the requirements of this section. In addition, the results of EPA's Ground Water Supply Survey may be used in a similar manner for systems supplied by a single well.

(i) Monitoring for the following compounds is required at the discretion of the commissioner:

- (1) 1,2,4-trimethylbenzene.
- (2) 1,2,3-trichlorobenzene.
- (3) n-propylbenzene.
- (4) n-butylbenzene.
- (5) Naphthalene.
- (6) Hexachlorobutadiene.
- (7) 1,3,5-trimethylbenzene.
- (8) p-isopropyltoluene.
- (9) Isopropylbenzene.
- (10) Tert-butylbenzene.
- (11) Sec-butylbenzene.
- (12) Fluorotrichloromethane.
- (13) Dichlorodifluoromethane.
- (14) Bromochloromethane.

(j) In lieu of performing the monitoring required by subsection (e), a community water system or nontransient noncommunity water system serving fewer than one hundred fifty (150) service connections may send a letter to the commissioner stating that the system is available for sampling, which means that sampling would be required if requested to do so by the commissioner. This letter must be sent to the commissioner no later than January 1, 1994. The system shall not send such samples to the commissioner, unless requested to do so by the commissioner.

(k) All community and nontransient noncommunity water systems shall repeat the monitoring required in subsection (e) no less frequently than every five (5) years for the dates specified in subsection (a).

(l) Public water systems may composite up to five (5) samples when monitoring for substances in subsections (e) and (i).

(m) Monitoring of the contaminants listed in subdivisions (11) and (12) shall be conducted as follows:

(1) Each community and nontransient noncommunity water system shall take four (4) consecutive quarterly samples at each sampling point for each contaminant listed in subdivision (11) and report the results to the commissioner. Monitoring must be completed by December 31, 1995.

(2) Each community and nontransient noncommunity water system shall take one (1) sample at each sampling point for each contaminant listed in subdivision (12) and report the results to the commissioner. Monitoring must be completed by December 31, 1995.

(3) Each community and nontransient noncommunity water system may apply to the commissioner for a waiver from the requirements of subdivisions (1) and (2).

(4) The commissioner may grant a waiver for the requirement of subdivision (1) based on the criteria specified in section 5.1(a)(6)

of this rule. The commissioner may grant a waiver from the requirement of subdivision (2) if previous analytical results indicate contamination would not occur, provided this data was collected after January 1, 1990.

(5) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(6) Surface water systems, which include systems with a combination of surface and ground sources, shall take a minimum of one (1) sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(7) If the system draws water from more than one (1) source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions, for example, when water representative of all sources is being used.

(8) The commissioner may require a confirmation sample for positive or negative results.

(9) The commissioner may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five (5) sampling points are allowed. Compositing of samples must be done in the laboratory and the composite sample must be analyzed within fourteen (14) days of collection. If the population served by the system is greater than three thousand three hundred (3,300) persons, then compositing may only be permitted by the commissioner at sampling points within a single system. If systems are serving less than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.

(10) In lieu of performing the monitoring required by this section, a community water system or nontransient noncommunity water system serving fewer than one hundred fifty (150) service connections may send a letter to the commissioner stating that the system is available for sampling. This letter must be sent to the commissioner by January 1, 1994. The system shall not send such samples to the commissioner unless requested to do so by the commissioner.

(11) The following is a list of unregulated synthetic organic contaminants:

<u>Organic Contaminants</u>	<u>EPA Analytical Method</u>
Aldicarb	531.1* and 6610*
Aldicarb Sulfone	531.1* and 6610*
Aldicarb Sulfoxide	531.1* and 6610*
Aldrin	505*, 508*, 508.1*, and 525.2*
Butachlor	507* and 525.2*
Carbaryl	531.1* and 6610*
Dicamba	515.1*, 515.2*, and 555*
Dieldrin	505*, 508*, 508.1*, and 525.2*
3-hydroxycarbofuran	531.1* and 6610*
Methomyl	531.1* and 6610*
Metolachlor	507*, 508.1*, and 525.2*
Metribuzin	507*, 508.1*, and 525.2*
Propachlor	508*, 508.1*, and 525.2*

(12) The following is an unregulated inorganic contaminant:

<u>Inorganic Contaminant</u>	<u>EPA Analytical Method</u>
Sulfate	300.0*, 375.2*, D4327-91*, 4110*, 4500-SO ₄ -F*, and 4500-SO ₄ -C, D*

*The methods referenced in this section may be obtained as follows:

(1) Method 524.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement II", EPA-600/R-92-129, August 1992, available from NTIS, PB92-207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(2) Method 502.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water", EPA-600/4-88-039, December 1988, Revised July 1991, available from NTIS, PB91-231480, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(3) Method 551 may be found in "Methods for the Determination of Organic Compounds in Drinking Water Supplement I", EPA/600-4-90-020, July 1990, available from NTIS, PB91-146027, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(4) Method 504.1, available from U.S. EPA EMSL, Cincinnati, Ohio 45268, (513) 569-7586.

(5) Methods 531.1, 505, 508, 508.1, 525.2, 507, 515.1, 515.2, and 555 may be found in "Technical Notes on Drinking Water Methods", EPA-600/R-94-173, October 1994, which is available at NTIS, PB95-104766, U.S. Department of Commerce, 5285 Port

Royal Road, Springfield, Virginia 22161.

(6) Method 6610 may be found in "Standard Methods for the Examination of Water and Wastewater 18th Edition Supplement", 1994, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

(7) Methods 300.0 and 375.2 may be found in "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993, available from NTIS, PB94-121811, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(8) Method D4327-91 may be found in "Annual Book of ASTM Standards", 1994, Vols. 11.01 and 11.02, American Society for Testing and Materials, available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(9) Methods 4110, 4500-SO₄-F, and 4500-SO₄-C,D may be found in "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, N1254, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-23; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1040; filed Aug 24, 1994, 8:15 a.m.: 18 IR 62; filed Aug 25, 1997, 8:00 a.m.: 21 IR 69*)

327 IAC 8-2-24 Use of noncentralized treatment devices

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 24. (a) Public water systems shall not use bottled water, point-of-use, or point-of-entry treatment devices to achieve compliance with an MCL. (Upon approval by the commissioner, bottled water, point-of-use, or point-of-entry treatment devices may be used on a temporary basis to avoid an unreasonable risk to health.)

(b) The commissioner may require a public water system to use bottled water, point-of-use devices, or point-of-entry devices as a condition for granting an exemption from the requirements of sections 4, 5(a), and 5.4(a) of this rule.

(c) Public water systems using bottled water as a condition of obtaining an exemption from the requirements of sections 4, 5(a), and 5.4(a) of this rule must meet the requirements in section 28(f) of this rule.

(d) Public water systems that use point-of-use or point-of-entry devices as a condition for receiving an exemption from the requirements of sections 4, 5(a), and 5.4(a) of this rule must meet the requirements in section 28(g) of this rule. (*Water Pollution Control Board; 327 IAC 8-2-24; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1042; filed Aug 24, 1994, 8:15 a.m.: 18 IR 65*)

327 IAC 8-2-25 Authority to grant and procedure to request a variance

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 4-21.5-3-5; IC 13-7-7-6

Sec. 25. (a) Except as otherwise provided by this section and in accordance with IC 13-7-7-6, the commissioner may grant a variance or renew an expired variance for a period not exceeding one (1) year to any public water system from any requirement of this rule upon a determination that immediate compliance with the rule required in the case of an original variance or continued compliance with the rule in the case of an expired variance would impose an undue hardship or burden upon the public water system.

(b) A variance shall not be available from the MCL for microbiological contaminants required by section 7 of this rule. Any variance from any other MCL required by this rule shall also include a determination by the commissioner as follows:

(1) Because of characteristics of the raw water sources which are reasonably available to the system, the system cannot meet the applicable MCL despite application of the best available technology, treatment techniques, or other means which the administrator has found are available.

(2) The granting of a variance will not result in an unreasonable risk to the health of persons served by the system.

(c) A variance shall not be available from filtration treatment required by section 8.5 of this rule. Any variance from any other requirement of a specified treatment technique under this rule shall also include a determination by the commissioner that such treatment technique is not necessary to protect the health of persons because of the nature of the raw water source of such system.

(d) A supplier of water may request the granting of a variance under this section for a public water system by submitting a request for a variance in writing to the commissioner. Suppliers of water may submit a joint request for variance when they seek similar variances under similar circumstances. Any written request for a variance or variances shall include the following information:

(1) The nature and duration of variance requested, including a list of persons to be notified under IC 4-21.5-3-5.

(2) Relevant analytical results of water quality sampling of the system, including results of relevant tests conducted under this rule.

(3) A request for a variance from any MCL made under subsection (b) shall also include the following:

(A) Economic and legal factors relevant to ability to comply.

(B) Analytical results of raw water quality relevant to the variance request.

(C) A proposed compliance schedule, including the date each step toward compliance will be achieved. Such schedule shall include, as a minimum, the following dates:

- (i) The date by which an arrangement for the alternative raw water source or improvement of the existing raw water source will be completed.
- (ii) The date of initiation of the connection of the alternative raw water source or improvement of the existing raw water source.
- (iii) The date by which final compliance is to be achieved.

(D) A plan for the provision of safe drinking water in the case of an excessive rise in the contaminant level for which the variance is requested.

(E) A plan for additional interim control measures during the effective period of the variance.

(4) A request for a variance from any requirement of a specific treatment technique made under subsection (c) shall also include a statement that the system will perform monitoring and other reasonable requirements prescribed by the commissioner as a condition to the variance.

(5) Other information, if any, believed to be pertinent by the applicant.

(6) Such other information as the commissioner may require.

(Water Pollution Control Board; 327 IAC 8-2-25; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1042; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2167)

327 IAC 8-2-26 Consideration of a variance request

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-7-6; IC 13-7-14-5

Affected: IC 4-21.5; IC 13-1-3-4; IC 13-7

Sec. 26. (a) The commissioner shall comply with IC 4-21.5 and section 28 of this rule when acting on any variance request submitted pursuant to this subsection.

(b) In determining whether the public water system is unable to comply with a MCL required by this rule because of the nature of the raw water source, the commissioner shall consider the following factors:

- (1) The effectiveness of treatment methods for the contaminant for which the variance is requested.
- (2) Cost and other economic considerations such as implementing treatment, improving the quality of the source water, or using an alternate source.

(c) In determining whether a public water system should be granted a variance from a required treatment technique because such treatment is unnecessary to protect the public health, the commissioner shall consider the following factors:

- (1) Quality of the water source including water quality data and pertinent sources of pollution.
- (2) Source protection measures employed by the public water system.

(d) If the commissioner decides to deny the application for a variance, the commissioner shall notify the applicant of his decision in writing, including a statement of reasons for the denial.

(e) If the commissioner proposes to grant a variance request submitted pursuant to section 25 of this rule, the commissioner shall notify the applicant of his decision in writing. Such notice shall identify the variance, the facility covered, and shall specify the period of time, not exceeding one (1) year, for which the variance will be effective.

(f) For the type of variance specified in section 25(b) of this rule, such notice shall provide that the variance will be terminated when the system comes into compliance with the applicable rule, and may be terminated upon a finding by the commissioner that the system has failed to comply with any requirement of a final schedule issued pursuant to section 25(c) of this rule.

(g) For the type of variance specified in subsection (c), such notice shall provide that the variance may be terminated at any time upon a finding that the nature of the raw water source is such that the specified treatment technique for which the variance was granted is necessary to protect the health of persons or upon a finding that the public water system has failed to comply with monitoring and other requirements prescribed by the commissioner as a condition to the granting of the variance.

(h) For a variance specified in subsection (b), the commissioner shall propose a schedule for the following:

- (1) Compliance (including increments of progress) by the public water system with each contaminant level requirement covered by the variance.
- (2) Implementation by the public water system of such additional control measures as the commissioner may require for each contaminant covered by the variance.

(i) The proposed schedule for compliance shall specify dates by which steps towards compliance are to be taken, including at the minimum, where applicable, the following:

- (1) Date by which arrangement for an alternative raw water source or improvement of existing raw water source will be completed.
- (2) Date of initiation of the connection for the alternative raw water source or improvement of the existing raw water source.
- (3) Date by which final compliance is to be achieved.

(j) The proposed schedule may, if the public water system has no access to an alternative raw water source, and can effect or anticipate no adequate improvement of the existing raw water source, specify an indefinite time period for compliance until a new and effective

treatment technology is developed at which time a new compliance schedule shall be prescribed by the commissioner.

(k) The proposed schedule for implementation of additional interim control measures during the period of variance shall specify interim treatment techniques, methods, and equipment, and dates by which steps toward meeting the additional interim control measures are to be met.

(l) The schedule shall be prescribed by the commissioner at the time the variance is granted. All variances are automatically conditioned on compliance with the schedule. (*Water Pollution Control Board; 327 IAC 8-2-26; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1043*)

327 IAC 8-2-27 Public hearings on variances and schedules

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-7-6; IC 13-7-14-5

Affected: IC 4-21.5; IC 13-1-3-4; IC 13-7

Sec. 27. (a) The commissioner may provide notice and opportunity for public hearing on any proposed variance to be issued under section 25 of this rule except that the commissioner shall provide notice and opportunity for public hearing on any proposed variance with a schedule or on any proposed variance from a specified treatment technique. A notice given pursuant to the preceding sentence may cover the granting of more than one (1) variance, and a hearing held pursuant to such notice shall include each of the variances covered by the notice.

(b) Public notice of an opportunity for hearing on a proposed variance shall be circulated in a manner designed to inform interested and potentially interested persons and shall include at least the following:

(1) Posting of a notice in the principal post office of each municipality or area served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the area served by the public water system.

(2) Mailing of a notice to appropriate state or local agencies at the commissioner's discretion.

(3) Such notice shall include a summary of the proposed variance and shall inform interested persons that they may request a public hearing on the proposed variance.

(c) Requests for a public hearing may be submitted by any interested person other than a federal agency. Frivolous or insubstantial requests may be denied by the commissioner. Requests must be submitted to the commissioner within thirty (30) days after issuance of the public notices provided for in subsection (b). Such requests shall include the following information:

(1) The name, address, and telephone number of the individual, organization, or other entity requesting a public hearing.

(2) A brief statement of the interest of the person making the request in the proposed variance or proposed variance with a schedule, and of the information that the requester intends to submit at such hearing.

(3) The signature of the individual making the request or, if the request is made on behalf of an organization or other entity, the signature of a responsible official of the organization or other entity.

(d) The commissioner shall give notice in the manner set forth in subsection (b) of any public hearing to be held pursuant to a request submitted by an interested person or on his own motion. Notice of the hearing shall also be sent to the persons requesting the hearing, if any. Notice of the hearing shall include a statement of the purpose of the hearing, information regarding the time and location for the hearing, and the address and telephone number of an office at which interested persons may obtain further information concerning the hearing. At least one (1) hearing location specified in the public notice shall be within the involved county. Notice of hearing shall be given not less than fifteen (15) days prior to the time scheduled for the hearing.

(e) A public hearing convened pursuant to subsection (d) shall be conducted before a hearing officer to be designated by the commissioner. The hearing shall be conducted by the hearing officer in an informal, orderly, and expeditious manner. The hearing officer shall have authority to call witnesses, receive oral and written testimony, and take such other action as may be necessary to assure the fair and efficient conduct of the hearing. Following the conclusion of the hearing, the hearing officer shall forward the record of the hearing to the commissioner.

(f) The proposed variance shall be issued in final form in accordance with IC 4-21.5 after notice of opportunity for a public hearing is given pursuant to subsection (b), no timely request for a public hearing is submitted, and the commissioner does not determine to hold a public hearing on his own motion.

(g) Within thirty (30) days after the termination of a public hearing held pursuant to this section the commissioner, taking into consideration information obtained during the hearing and other relevant information, shall confirm, revise, or rescind the proposed variance.

(h) Within thirty (30) days after the effective date of any variance, the commissioner shall notify both the administrator and the Region V regional administrator that the commissioner has granted the variance, its terms, the reasons for it, and the basis for the findings and documentation of the need for the variance. (*Water Pollution Control Board; 327 IAC 8-2-27; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1044*)

327 IAC 8-2-28 Additional conditions for variances from the maximum contaminant levels for volatile organic compounds

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-7-6; IC 13-7-14-5

Affected: IC 13-7

Sec. 28. (a) The technologies listed in sections 5(d) and 5.4(b) of this rule are identified as the BAT, treatment techniques, or other means available for achieving compliance with the MCLs for organic chemicals listed in sections 5 and 5.4(a) of this rule. The technologies listed in section 4(f) of this rule are identified as the BAT, treatment techniques, or other means available for achieving compliance with the MCLs for the inorganic chemicals listed in section 4 of this rule.

(b) The commissioner shall require community water systems and nontransient noncommunity water systems to install and/or use any treatment method identified in sections 4(f), 5(d), and 5.4(b) of this rule as a condition for granting a variance except as provided in subsection (c). If, after the system's installation of the treatment method, the system cannot meet the MCL, that system shall be eligible for a variance under section 26 of this rule.

(c) If a system can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment methods identified in sections 4(f), 5(d), and 5.4(b) of this rule would only achieve a de minimis reduction in contaminants, the commissioner may issue a schedule of compliance that requires the system being granted the variance to examine other treatment methods as a condition of obtaining the variance.

(d) If the commissioner determines that a treatment method identified in subsection (c) is technically feasible, the commissioner may require the system to install and/or use that treatment method in connection with a compliance schedule issued. The commissioner's determination shall be based upon studies by the system and other relevant information.

(e) The commissioner may require a public water system to use bottled water, point-of-use treatment devices, point-of-entry treatment devices, or other means as a condition of granting a variance or an exemption from the requirements of sections 4, 5(a), and 5.4(a) of this rule to avoid an unreasonable risk to health.

(f) Public water systems that use bottled water as a condition for receiving a variance or an exemption from the requirements of sections 4(a), 5(a), and 5.4(a) of this rule must meet the following requirements in either subdivision (1) or (2) in addition to requirements in subdivision (3):

(1) The commissioner must require and approve a monitoring program for bottled water. The public water system must develop and put in place a monitoring program that provides reasonable assurances that the bottled water meets all MCLs. The public water system must monitor a representative sample of the bottled water for all contaminants regulated under sections 4(a), 5(a), and 5.4(a) of this rule during the first three (3) month period that it supplies the bottled water to the public, and annually thereafter. Results of the monitoring program shall be provided to the commissioner annually.

(2) The public water system must receive a certification from the bottled water company that:

(A) the bottled water supplied has been taken from an approved source as defined in 21 CFR 129.3(a);

(B) the bottled water company has conducted monitoring in accordance with 21 CFR 129.80(g)(1) through 21 CFR 129.80(g)(3); and

(C) the bottled water does not exceed any MCLs or quality limits as set out in 21 CFR 103.35, 21 CFR 110, and 21 CFR 129. The public water system shall provide certification to the commissioner the first quarter after it supplies bottled water, and annually thereafter. A public water system may satisfy the requirements of this subdivision if an approved monitoring program is already in place in another state.

(3) The public water system is fully responsible for the provision of sufficient quantities of bottled water to every person supplied by the public water system via door-to-door bottled water delivery.

(g) Public water systems that use point-of-use or point-of-entry devices as a condition for obtaining a variance or an exemption under section 26 of this rule for organic and inorganic compounds must meet the following requirements:

(1) It is the responsibility of the public water system to operate and maintain the point-of-use and/or point-of-entry treatment devices system.

(2) The public water system must develop a monitoring plan and obtain the commissioner's approval for the plan before point-of-use and/or point-of-entry treatment devices are installed for compliance. This monitoring plan must provide health protection equivalent to that provided by a central water treatment.

(3) Effective technology must be properly applied under a plan approved by the commissioner and the microbiological safety of the water must be maintained at all times.

(4) The commissioner must require adequate certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-use and/or point-of-entry treatment devices.

(5) The design and application of the point-of-use and/or point-of-entry devices must consider the potential for an increase in heterotrophic bacteria concentrations in water treated with activated carbon. It may be necessary to use frequent backwashing, postcontactor disinfection, and heterotrophic plate count monitoring to ensure that the microbiological safety of the water is not compromised.

(6) The commissioner must be assured that buildings connected to the system have sufficient point-of-use or point-of-entry devices that are properly installed, maintained, and monitored such that all consumers will be protected. The rights and responsibilities of the public water system customer must be conveyed with the title upon the sale of the property.

(*Water Pollution Control Board; 327 IAC 8-2-28; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1045; filed Aug 24, 1994, 8:15 a.m.: 18 IR 65*)

327 IAC 8-2-29 Reporting and public notification; unregulated contaminants

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 29. (a) The requirements of this section only apply to the contaminants listed in section 23 of this rule.

(b) The owner or operator of a community water system or nontransient noncommunity water system who is required to monitor under section 23 of this rule shall send a copy of the results of such monitoring within thirty (30) days of receipt and a copy of any public notice issued under subsection (d) to the commissioner.

(c) The community water system or nontransient noncommunity water system shall furnish the following information to the commissioner for each sample analyzed under section 23 of this rule:

- (1) Results of all analytical methods, including negatives.
- (2) Name and address of the system that supplied the sample.
- (3) Contaminants.
- (4) Analytical methods used.
- (5) Date, time, and place of the sample and the name of the person who collected the sample.
- (6) Date of analysis, laboratory, and person responsible for performing the analysis.
- (7) Identification of sample as to whether raw plant tap or distribution sample.

(d) The owner or operator shall notify persons served by the system of the availability of the results of sampling conducted under section 23 of this rule by including a notice in the first set of water bills issued by the system after the receipt of the results or written notice within three (3) months. The notice shall identify a person and telephone number to contact for information on the monitoring results. For surface water systems, public notification is required only after the first quarter's monitoring and must include a statement that additional monitoring will be conducted for three (3) more quarters with the results available upon request.

(e) The commissioner may give notice to the public required by this section for those systems having no detectable unregulated contaminants. (*Water Pollution Control Board; 327 IAC 8-2-29; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1046; errata filed Apr 5, 1991, 3:30 p.m.: 14 IR 1626; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2259*)

327 IAC 8-2-30 Maximum contaminant level goals; organic compounds

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 30. (a) MCLGs are zero (0) for the following organic compounds:

- (1) Benzene.
- (2) Vinyl chloride.
- (3) Carbon tetrachloride.
- (4) 1,2-dichloroethane.
- (5) Trichloroethylene.
- (6) Acrylamide.
- (7) Alachlor.
- (8) Chlordane.
- (9) Dibromochloropropane.
- (10) 1,2-dichloropropane.
- (11) Epichlorohydrin.
- (12) Ethylene dibromide.
- (13) Heptachlor.
- (14) Heptachlor epoxide.
- (15) Pentachlorophenol.
- (16) Polychlorinated biphenyls (PCBs).
- (17) Tetrachloroethylene.
- (18) Toxaphene.
- (19) Benzo[a]pyrene.
- (20) Dichloromethane.
- (21) Di(2-ethylhexyl)phthalate.
- (22) Hexachlorobenzene.
- (23) 2,3,7,8-TCDD (dioxin).

(b) MCLGs for the following organic compounds are as follows:

<u>Contaminant</u>	<u>MCLG in Milligrams Per Liter</u>
1,1-dichloroethylene	0.007
1,1,1-trichloroethane	0.20
para-dichlorobenzene	0.075
Aldicarb	0.001
Aldicarb sulfoxide	0.001
Aldicarb sulfone	0.001
Atrazine	0.003
Carbofuran	0.04
Ortho-dichlorobenzene	0.6
cis-1,2-dichloroethylene	0.07
trans-1,2-dichloroethylene	0.1
2,4-D	0.07
Ethylbenzene	0.7
Lindane	0.0002
Methoxychlor	0.04
Monochlorobenzene	0.1
Styrene	0.1
Toluene	1
2,4,5-TP	0.05
Xylenes	10
Dalapon	0.2
Di(2-ethylhexyl)adipate	0.4
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorocyclopentadiene	0.05
Oxamyl (vydate)	0.2
Picloram	0.5
Simazine	0.004
1,2,4-trichlorobenzene	0.07
1,1,2-trichloroethane	0.003

(*Water Pollution Control Board; 327 IAC 8-2-30; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047; filed Aug 24, 1994, 8:15 a.m.: 18 IR 66*)

327 IAC 8-2-31 Maximum contaminant level goals; microbiological contaminants

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 31. Maximum contaminant level goals (MCLGs) are zero (0) for the following microbiological contaminants:

- (1) *Giardia lamblia*.
- (2) Viruses.
- (3) *Legionella*.
- (4) Total coliforms (including fecal coliforms and *Escherichia coli*).

(*Water Pollution Control Board; 327 IAC 8-2-31; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047*)

327 IAC 8-2-32 Alternate analytical techniques

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-4; IC 13-7

Sec. 32. With the written permission of the commissioner and concurrence of the administrator, an alternate analytical technique may be employed. An alternate technique shall be accepted only if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any MCL. The use of the alternate analytical technique shall not decrease the frequency of monitoring required by this rule. (*Water Pollution Control Board; 327 IAC 8-2-32; filed Dec 28, 1990, 5:10 p.m.:*

14 IR 1047)

327 IAC 8-2-33 Certified laboratories

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 33. (a) For the purpose of determining compliance with this rule, samples shall be accepted only if they have been analyzed by a laboratory certified by the commissioner, except that measurement for turbidity, chlorine residual, temperature, and pH may be performed by any person acceptable to the commissioner.

(b) Nothing in this rule shall be construed to preclude the commissioner or any duly designated representative of the commissioner from taking samples or from using the results from such samples to determine compliance by a supplier of water with the applicable requirements of this rule. (*Water Pollution Control Board; 327 IAC 8-2-33; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 940*)

327 IAC 8-2-34 Maximum contaminant level goals; inorganic contaminants

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 34. MCLGs for the following contaminants are as indicated:

<u>Contaminant</u>	<u>MCLG in Milligrams Per Liter</u>
Fluoride	4.0
Asbestos	7 million fibers per liter (longer than 10 micrometers)
Barium	2
Cadmium	0.005
Chromium	0.1
Copper	1.3
Lead	0
Mercury	0.002
Nitrate	10 (as nitrogen)
Nitrite	1 (as nitrogen)
Total nitrate + nitrite	10 (as nitrogen)
Selenium	0.05
Antimony	0.006
Beryllium	0.004
Cyanide (as free cyanide)	0.2
Nickel	0.1
Thallium	0.0005

(*Water Pollution Control Board; 327 IAC 8-2-34; filed Aug 24, 1994, 8:15 a.m.: 18 IR 67*)

327 IAC 8-2-35 Treatment techniques

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 35. (a) The requirements of this section constitute national primary drinking water regulations. These regulations establish treatment techniques in lieu of MCLs for specified contaminants.

(b) Each public water system must certify annually in writing to the commissioner (using third party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified as follows:

(1) Acrylamide equals five-hundredths percent (0.05%) dosed at one (1) part per million or equivalent.

(2) Epichlorohydrin equals one-hundredth percent (0.01%) dosed at twenty (20) parts per million or equivalent.

(c) Certifications can rely on manufacturers or third parties, as approved by the commissioner. (*Water Pollution Control Board; 327 IAC 8-2-35; filed Aug 24, 1994, 8:15 a.m.: 18 IR 67*)

327 IAC 8-2-36 General requirements; lead and copper

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 36. (a) The requirements of this section and sections 37 through 47 of this rule constitute the national primary drinking water

regulations for lead and copper. Unless otherwise indicated, each section applies to community water systems and nontransient noncommunity water systems (hereinafter referred to as water systems or systems).

(b) This section and sections 37 through 47 of this rule establish a treatment technique that includes requirements for corrosion control treatment, lead service line replacement, and public education. These requirements are triggered, in some cases, by lead and copper action levels measured in samples collected at consumers' taps.

(c) The following are requirements for lead and copper action levels:

(1) The lead action level is exceeded if the concentration of lead in more than ten percent (10%) of tap water samples collected during any monitoring period conducted in accordance with section 37 of this rule is greater than fifteen-thousandths (0.015) milligram per liter (i.e., if the ninetieth percentile lead level is greater than fifteen-thousandths (0.015) milligram per liter).

(2) The copper action level is exceeded if the concentration of copper in more than ten percent (10%) of tap samples collected during any monitoring period conducted in accordance with section 37 of this rule is greater than one and three-tenths (1.3) milligram per liter (i.e., if the ninetieth percentile copper level is greater than one and three-tenths (1.3) milligram per liter).

(3) The ninetieth percentile lead and copper levels shall be computed as follows:

(A) The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number one (1) for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.

(B) The number of samples taken during the monitoring period shall be multiplied by nine-tenths (0.9).

(C) The contaminant concentration in the numbered sample yielded by the calculation in clause (B) is the ninetieth percentile contaminant level.

(D) For water systems serving fewer than one hundred (100) people that collect five (5) samples per monitoring period, the ninetieth percentile is computed by taking the average of the highest and second highest concentrations.

(d) The following are requirements for corrosion control treatment:

(1) All water systems shall install and operate optimal corrosion control treatment as defined in section 41 of this rule.

(2) Any water system that complies with the applicable corrosion control treatment requirements specified by the commissioner under sections 40 and 41 of this rule shall be deemed in compliance with the treatment requirement contained in subdivision (1).

(e) Any system exceeding the lead or copper action level shall implement all applicable source water treatment requirements specified by the state under section 42 of this rule.

(f) Any system exceeding the lead action level after implementation of applicable corrosion control and source water treatment requirements shall complete the lead service line replacement requirements contained in section 43 of this rule.

(g) Any system exceeding the lead action level shall implement the public education requirements contained in section 44 of this rule.

(h) Tap water monitoring for lead and copper, monitoring for water quality parameters, source water monitoring for lead and copper, and analyses of the monitoring results under this subsection shall be completed in compliance with sections 37 through 39 and 45 of this rule.

(i) Systems shall report to the commissioner any information required by the treatment provisions of this subsection and section 46 of this rule.

(j) Systems shall maintain records in accordance with section 47 of this rule.

(k) Failure to comply with the applicable requirements of this section and sections 37 through 47 of this rule shall constitute a violation of the drinking water regulations for lead or copper, or both. (*Water Pollution Control Board; 327 IAC 8-2-36; filed Aug 24, 1994, 8:15 a.m.: 18 IR 67; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532*)

327 IAC 8-2-37 Monitoring requirements for lead and copper in tap water

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 37. (a) The following are requirements for sample site locations:

(1) By the applicable date of commencement of monitoring under subsection (d)(1), each water system shall complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meet the requirements of this section and that are sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in subsection (c). All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designated to remove inorganic contaminants.

(2) A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under section 22 of this rule (special monitoring for corrosivity characteristics) when conducting a materials evaluation. When an evaluation of the information collected under section 22(d) of this rule is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in subdivisions (3) through (7), the water system shall review the sources of information listed in clauses (A) through

(C) in order to identify a sufficient number of sampling sites. In addition, the system shall seek to collect such information, where possible, in the course of its normal operations, such as checking service line materials when reading water meters or performing maintenance activities:

- (A) all plumbing codes, permits, and records in the files of the building department which indicate the plumbing materials that are installed within publicly or privately owned structures connected to the distribution system;
 - (B) all inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and
 - (C) all existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.
- (3) The sampling sites selected for a community water system's sampling pool (tier one (1) sampling sites) shall consist of:
- (A) single family structures; or
 - (B) multiple family residences if such residences comprise at least twenty percent (20%) of the structures served by water systems that:
 - (i) contain copper pipes with lead solder installed after 1982 or contain lead pipes; or
 - (ii) are served by a lead service line, or both.
- (4) Any community water system with insufficient tier one (1) sampling sites shall complete its sampling pool with tier two (2) sampling sites consisting of buildings, including multiple family residences that:
- (A) contain copper pipes with lead solder installed after 1982 or contain lead pipes; or
 - (B) are served by a lead service line, or both.
- (5) Any community water system with insufficient tier one (1) and tier two (2) sampling sites shall complete its sampling pool with tier three (3) sampling sites consisting of single family structures that contain copper pipes with lead solder installed before 1983.
- (6) The sampling sites selected for a nontransient noncommunity water system (tier one (1) sampling sites) shall consist of buildings that:
- (A) contain copper pipes with lead solder installed after 1982 or contain lead pipes; or
 - (B) are served by a lead service line, or both.
- (7) A nontransient noncommunity water system with insufficient tier one (1) sites that meet the targeting criteria in subdivision (6) shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983.
- (8) Any water system whose sampling pool does not consist exclusively of tier one (1) sites shall demonstrate, in a letter submitted to the commissioner under section 46(a)(2) of this rule, why a review of the information listed in subdivision (2) was inadequate to locate a sufficient number of tier one (1) sites. Any community water system which includes tier three (3) sampling sites in its sampling pool shall demonstrate in such letter why it was unable to locate a sufficient number of tier one (1) and tier two (2) sampling sites.
- (9) Any water system whose distribution system contains lead service lines shall draw fifty percent (50%) of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and fifty percent (50%) of the samples from sites served by a lead service line. A water system that cannot identify a sufficient number of sampling sites served by a lead service line shall demonstrate in a letter submitted to the commissioner under section 46(a)(4) of this rule why the system was unable to locate a sufficient number of such sites. Such a water system shall collect first draw samples from all of the sites identified as being served by such lines.
- (b) The following are requirements for sample collection methods:
- (1) All tap samples for lead and copper collected in accordance with this subsection, with the exception of lead service line samples collected under section 43(c) of this rule, shall be first draw samples.
- (2) Each first draw tap sample for lead and copper shall be one (1) liter in volume and have stood motionless in the plumbing system of each sampling site for at least six (6) hours. First draw samples from residential housing shall be collected from the cold-water kitchen tap or bathroom sink tap. First draw samples from a nonresidential building shall be collected at an interior tap from which water is typically drawn for consumption. First draw samples may be collected by the system or the system may allow residents to collect first draw samples after instructing the residents of the sampling procedures specified in this subdivision. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.
- (3) Each service line sample shall be one (1) liter in volume and have stood motionless in the lead service line for at least six (6) hours. Lead service line samples shall be collected in one (1) of the following three (3) ways:
- (A) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line.
 - (B) Tapping directly into the lead service line.
 - (C) If the sampling site is a building constructed as a single family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(4) A water system shall collect each first draw tap sample from the same sampling site from which it collected a previous sample. If, for any reason, the water system cannot gain entry to a sampling site in order to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria and is within reasonable proximity of the original site.

(c) Water systems shall collect at least one (1) sample during each monitoring period specified in subsection (d) from the number of sites listed in the second column of the table in this subsection (standard monitoring). A system conducting reduced monitoring under subsection (d)(4) may collect one (1) sample from the number of sites specified in the third column of the table in this subsection during each monitoring period specified in subsection (d)(4).

<u>System Size (Number of People Served)</u>	<u>Number of Sites (Standard Monitoring)</u>	<u>Number of Sites (Reduced Monitoring)</u>
> 100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
<101	5	5

(d) The following are requirements for the timing of monitoring:

(1) For initial tap sampling, the first six (6) month monitoring period for small, medium size, and large systems shall begin on the following dates:

<u>System Size (Number of People Served)</u>	<u>First Six Month Monitoring Period Begins On</u>
> 50,000	January 1, 1992
3,301 to 50,000	July 1, 1992
< 3,301	July 1, 1993

The monitoring requirements are as follows:

- (A) All large systems shall monitor during two (2) consecutive six (6) month periods.
- (B) All small and medium size systems shall monitor during each six (6) month monitoring period until:
 - (i) the system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under section 40 of this rule, in which case the system shall continue monitoring in accordance with subdivision (2); or
 - (ii) the system meets the lead and copper action levels during two (2) consecutive six (6) month monitoring periods in which case the system may reduce monitoring in accordance with subdivision (d)(4).
- (2) Tap water monitoring requirements for lead and copper after corrosion control and source water treatment are as follows:
 - (A) Any large system which installs optimal corrosion control treatment under STEP FOUR of section 40(d) of this rule shall monitor during two (2) consecutive six (6) month monitoring periods by the date specified in STEP FIVE of section 40(d) of this rule.
 - (B) Any small or medium size system which installs optimal corrosion control treatment under STEP FIVE of section 40(e) of this rule shall monitor during two (2) consecutive six (6) month monitoring periods by the date specified in STEP SIX of section 40(e) of this rule.
 - (C) Any system which installs source water treatment under STEP THREE of section 42(a) of this rule shall monitor during two (2) consecutive six (6) month monitoring periods by the date specified in STEP FOUR of section 42(a) of this rule.
- (3) After the commissioner specifies the values for water quality control parameters under section 41(f) of this rule, the system shall monitor during each subsequent six (6) month monitoring period, with the first monitoring period to begin on the date the commissioner specifies optimal values under section 41(f) of this rule.
- (4) Reduced monitoring requirements shall be as follows:
 - (A) A small or medium size water system that meets the lead and copper action levels during each of two (2) consecutive six (6) month monitoring periods may reduce the number of samples in accordance with subsection (c), and reduce the frequency of

sampling to once per year.

(B) Any water system that maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the commissioner under section 41(f) of this rule during each of two (2) consecutive six (6) month monitoring periods may request that the commissioner allow the system to reduce the frequency of monitoring to once per year and to reduce the number of lead and copper samples in accordance with subsection (c). The commissioner shall review the information submitted by the water system and shall make the decision in writing, setting forth the basis for the determination. The commissioner shall review and, where appropriate, revise the determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(C) A small or medium size water system that meets the lead and copper action levels during three (3) consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three (3) years. Any water system that maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the commissioner under section 41(f) of this rule during three (3) consecutive years of monitoring may request that the commissioner allow the system to reduce the frequency of monitoring from annually to once every three (3) years. The commissioner shall review the information submitted by the water system and shall make the decision in writing, setting forth the basis for the determination. The commissioner shall review and, where appropriate, revise the determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(D) A water system that reduces the number and frequency of sampling shall collect these samples from sites included in the pool of targeted sampling sites identified in subsection (a). Systems sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August, or September.

(E) A small or medium size water system subject to reduced monitoring that exceeds the lead or copper action level shall resume sampling in accordance with subdivision (3) and collect the number of samples specified for standard monitoring under subsection (c). Such system shall also conduct water quality parameter monitoring in accordance with section 38(c), 38(d), or 38(e) of this rule, as appropriate, during the monitoring period in which it exceeds the action level. Any water system subject to reduced monitoring frequency that fails to operate within the range of values for the water quality control parameters specified by the commissioner under section 41(f) of this rule shall resume tap water sampling in accordance with subdivision (3) and collect the number of samples specified for standard monitoring under subsection (c).

(e) The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the commissioner in making any determinations (i.e., calculating the ninetyth percentile lead or copper level) under section 36 of this rule, this section, and sections 38 through 47 of this rule. (*Water Pollution Control Board; 327 IAC 8-2-37; filed Aug 24, 1994, 8:15 a.m.: 18 IR 68; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532*).

327 IAC 8-2-38 Monitoring requirements for water quality parameters

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 38. (a) All large water systems and all small and medium size water systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in accordance with this section. The requirements of this section are summarized in the table in subsection (b)(2)(A).

(b) General monitoring requirements for water quality parameters shall be as follows:

(1) Requirements for sample collection methods shall be as follows:

(A) Tap samples shall be representative of water quality throughout the distribution system taking into account:

- (i) the number of persons served;
- (ii) the different sources of water;
- (iii) the different treatment methods employed by the system; and
- (iv) seasonal variability.

Tap sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under section 37(a) of this rule. (Note: Systems may find it convenient to conduct tap sampling for water quality parameters at sites used for coliform sampling under section 8 of this rule.)

(B) Samples collected at the entry point to the distribution system shall be from locations representative of each source after treatment. If a system draws water from more than one (1) source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water used is representative of all sources being used).

(2) Requirements for the number of samples shall be as follows:

(A) Systems shall collect two (2) tap samples for applicable water quality parameters during each monitoring period specified under subsections (c) through (f) from the number of sites listed in the following table:

System Size (Number of People Served)	Number of Sites
> 100,000	25
10,001 to 100,000	10
3,301 to 10,000	3
501 to 3,300	2
≤ 500	1

(B) Systems shall collect two (2) samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in subsection (c). During each monitoring period specified in subsections (d) through (f), systems shall collect one (1) sample for each applicable water quality parameter at each entry point to the distribution system.

(c) This subsection governs initial sampling. All large water systems shall measure the applicable water quality parameters as specified in subdivision (1) at taps and at each entry point to the distribution system during each six (6) month monitoring period specified in section 37(d)(1) of this rule. All small and medium size systems shall measure the applicable water quality parameters at the locations specified in subdivision (1) during each six (6) month monitoring period specified in section 37(d)(1) of this rule during which the system exceeds the lead or copper action level.

(1) Monitoring requirements for water quality parameters at taps are as follows:

- (A) pH.
- (B) Alkalinity.
- (C) Orthophosphate, when an inhibitor containing a phosphate compound is used.
- (D) Silica, when an inhibitor containing a silica compound is used.
- (E) Calcium.
- (F) Conductivity.
- (G) Water temperature.

(2) At each entry point to the distribution system, all of the applicable parameters listed in subdivision (1).

(d) This subsection governs monitoring after installation of corrosion control. Any large system which installs corrosion control treatment under section 40(d)(4) of this rule shall measure the water quality parameters at the locations and frequencies specified in this subsection during each six (6) month monitoring period specified in section 37(d)(2)(A) of this rule. Any small or medium size system which installs corrosion control treatment shall conduct monitoring during each six (6) month monitoring period specified in section 37(d)(2)(B) of this rule in which the system exceeds the lead or copper action level.

(1) Monitoring requirements for water quality parameters at taps are two (2) samples for:

- (A) pH;
- (B) alkalinity;
- (C) orthophosphate, when an inhibitor containing a phosphate compound is used;
- (D) silica, when an inhibitor containing a silicate compound is used; and
- (E) calcium, when calcium carbonate stabilization is used as part of corrosion control.

(2) Monitoring requirements for water quality parameters at each entry point to the distribution system are one (1) sample every two (2) weeks (biweekly) for:

- (A) pH;
- (B) when alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity and the alkalinity concentration; and
- (C) when a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used and the concentration of the orthophosphate or silica (whichever is applicable).

(e) This subsection governs monitoring after water quality parameter values for optimal corrosion control are specified. After the commissioner specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under section 41(f) of this rule, all large water systems shall measure the applicable water quality parameters in accordance with subsection (d) during each monitoring period specified in section 37(d)(3) of this rule. Any small or medium size system shall conduct such monitoring during each monitoring period specified in section 37(d)(3) of this rule in which the system exceeds the lead or copper action level. The system may take a confirmation sample for any water quality parameter value no later than three (3) days after the first sample. If a confirmation sample is taken, the result must be averaged with the first sampling result and the average must be used for any compliance determinations under section 41(g) of this rule. The commissioner has the discretion to delete results of obvious sampling errors from this calculation.

(f) The following are requirements for reduced monitoring:

(1) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two (2) consecutive six (6) month monitoring periods under subsection (e) shall continue monitoring at the entry point to the distribution system as specified in subsection (d)(2). Such system may collect two (2) tap samples for applicable water quality

parameters from the reduced number of sites shown in the following table during each six (6) month monitoring period:

- | System Size (Number of People Served) | Reduced Number of Sites | Range of Water Quality Parameters |
|---------------------------------------|-------------------------|-----------------------------------|
| > 100,000 | 10 | 10 |
| 10,001 to 100,000 | 7 | 7 |
| 2,001 to 10,000 | 2 | 2 |
| 201 to 2,000 | 1 | 1 |
- (2) Any water system that maintains the range of values for water quality parameters reflecting optimal corrosion control treatment specified by the commissioner under section 41(f) of this rule during three (3) consecutive years of monitoring may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in subdivision (1) from once every six (6) months to annually. Any water system that maintains the range of water quality parameters reflecting optimal corrosion control treatment specified by the commissioner under section 41(f) of this rule during three (3) consecutive years of annual monitoring under this subdivision may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in subdivision (1) from annually to once every three (3) years.
- (3) A water system that conducts sampling annually shall collect these samples evenly throughout the year so as to reflect seasonal variability.
- (4) Any water system subject to the reduced monitoring frequency that fails to operate within the range of values for the water quality parameters specified by the commissioner under section 41(f) of this rule shall resume tap water sampling in accordance with the number and frequency requirements in subsection (d).

(g) The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the commissioner in making any determinations (i.e., determining concentrations of water quality parameters) under this section or section 41 of this rule. (*Water Pollution Control Board; 327 IAC 8-2-38; filed Aug 24, 1994, 8:15 a.m.: 18 IR 71; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 940*)

327 IAC 8-2-39 Monitoring requirements for lead and copper in source water

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 39. (a) Requirements for sample location, collection methods, and number of samples shall be as follows:

- (1) A water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with section 37 of this rule shall collect lead and copper source water samples in accordance with the requirements regarding sample location, number of samples, and collection methods specified in section 4.1 of this rule (inorganic chemical sampling). (Note: The timing of sampling for lead and copper shall be in accordance with subsections (b) and (c), and not dates specified in section 4.1 of this rule.)
- (2) Where the results of sampling indicate the maximum permissible source water levels established under section 42(b)(4) of this rule have been exceeded, the commissioner may require that one (1) additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two (2) weeks) at the same sampling point. If a confirmation sample required by the commissioner is taken for lead or copper, then the results of the initial and confirmation sample shall be averaged in determining compliance with the maximum permissible levels specified by the commissioner. Any sample value below the detection limit shall be considered to be zero (0). Any value above the detection limit but below the practical quantitation level shall either be considered as the measured value or be considered one-half (1/2) the practical quantitation level.
- (b) Any system which exceeds the lead or copper action level at the tap shall collect one (1) source water sample from each entry point to the distribution system within six (6) months after the action level has been exceeded.
- (c) Any system which installs source water treatment under STEP THREE of section 42(a) of this rule shall collect an additional source water sample from each entry point to the distribution system during two (2) consecutive six (6) month monitoring periods by the deadline specified in STEP FOUR of section 42(a) of this rule.
- (d) Requirements for monitoring frequency after the commissioner specifies maximum permissible source water levels or determines that source water treatment is not needed shall be as follows:
 - (1) A system shall monitor at the frequency specified as follows in cases where the commissioner specifies maximum permissible source water levels under STEP FOUR of section 42(b) of this rule or determines that the system is not required to install source water treatment under STEP TWO of section 42(b) of this rule:
 - (A) A water system using only ground water shall collect samples once during the three (3) year compliance period (as that term is defined in section 1(10) of this rule) in effect when the applicable determination under this subdivision is made by the commissioner. Such systems shall collect samples once during each subsequent compliance period.
 - (B) A water system using surface water (or a combination of surface and ground water) shall collect samples once during each year, the first annual monitoring period to begin on the date on which the applicable determination is made under this subdivision.
 - (2) A system is not required to conduct source water sampling for lead or copper, or both, if the system meets the action level for the specific contaminant in tap water samples during the entire source water sampling period applicable to the system under subdivision (1).
- (e) Requirements for reduced monitoring frequency shall be as follows:
 - (1) A water system using only ground water which demonstrates that finished drinking water entering the distribution system has been

maintained below the maximum permissible lead or copper, or both, concentrations specified by the commissioner in STEP FOUR of section 42(b) of this rule during at least three (3) consecutive compliance periods under subsection (d)(1) may reduce the monitoring frequency for lead or copper, or both, to once during each nine (9) year compliance cycle (as that term is defined in section 1(9) of this rule).

(2) A water system using surface water (or a combination of surface and ground waters) which demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the commissioner in STEP FOUR of section 42(b) of this rule for at least three (3) consecutive years may reduce the monitoring frequency in subsection (d)(1) to once during each nine (9) year compliance cycle (as that term is defined in section 1(9) of this rule).

(3) A water system that uses a new source of water is not eligible for reduced monitoring for lead or copper, or both, until concentrations in samples collected from the new source during three (3) consecutive monitoring periods are below the maximum permissible lead and copper concentrations specified by the commissioner in STEP FIVE of section 42(a) of this rule.

(Water Pollution Control Board; 327 IAC 8-2-39; filed Aug 24, 1994, 8:15 a.m.: 18 IR 73; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532)

327 IAC 8-2-40 Applicability of corrosion control treatment steps to small, medium size, and large water systems

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 40. (a) Systems shall complete the applicable corrosion control treatment requirements described in section 41 of this rule by the deadlines established as follows:

(1) A large system (serving more than fifty thousand (50,000) persons) shall complete the corrosion control treatment steps specified in subsection (d) unless it is deemed to have optimized corrosion control under subsection (b)(2) or (b)(3).

(2) A small system (serving less than or equal to three thousand three hundred (3,300) persons) and a medium size system (serving more than three thousand three hundred (3,300) and less than or equal to fifty thousand (50,000) persons) shall complete the corrosion control treatment steps specified in subsection (e), unless it is deemed to have optimized corrosion control under subsection (b)(1), (b)(2), or (b)(3).

(b) A system is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in this section if the system satisfies one (1) of the following criteria:

(1) A small or medium size water system is deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two (2) consecutive six (6) month monitoring periods conducted in accordance with section 37 of this rule.

(2) Any water system may be deemed by the commissioner to have optimized corrosion control treatment if the system demonstrates to the satisfaction of the commissioner that it has conducted activities equivalent to the corrosion control steps applicable to such system under this section. If the commissioner makes this determination, the commissioner shall provide the system with written notice explaining the basis for the decision and shall specify water quality control parameters representing optimal corrosion control in accordance with section 41(f) of this rule. A system shall provide the following information to the commissioner in order to support a determination under this subsection:

(A) The results of all test samples collected for each of the water quality parameters in section 41(c)(3) of this rule.

(B) A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in section 42(c)(1) of this rule, the results of all tests conducted, and the basis for the system's selection of optimal corrosion control treatment.

(C) A report explaining how corrosion control has been installed and how it is being maintained to ensure minimal lead and copper concentrations at consumers' taps.

(D) The results of tap water samples collected in accordance with section 37 of this rule at least once every six (6) months for one (1) year after corrosion control has been installed.

(3) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring in accordance with section 37 of this rule and source water monitoring conducted in accordance with section 39 of this rule that demonstrates for two (2) consecutive six (6) month periods that the difference between the ninetieth percentile tap water lead level computed under section 36(c)(3) of this rule and the highest source water lead concentration is less than the practical quantitation level for lead specified in section 45(a)(1)(B) of this rule.

(c) Any small or medium size system that is required to complete the corrosion control steps due to its exceeding the lead or copper action level may cease completing the treatment steps whenever the system meets both action levels during each of two (2) consecutive monitoring periods conducted under section 37 of this rule and submits the results to the commissioner. If any such water system thereafter exceeds the lead or copper action level during any monitoring period, the system (or the commissioner, as the case may be)

shall recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The commissioner may require a system to repeat treatment steps previously completed by the system where it has been determined by the commissioner that this is necessary to implement properly the treatment requirements of this section. The commissioner shall notify the system in writing of such a determination and explain the basis for the decision. The requirement for any small or medium size water system to implement corrosion control treatment steps in accordance with subsection (e) (including systems deemed to have optimized corrosion control under subsection (b)(1)) is triggered whenever any small or medium size water system exceeds the lead or copper action level.

(d) Except as provided in subsection (b)(2) and (b)(3), large systems shall complete the following corrosion control treatment steps (described in the referenced portions of sections 37, 38, and 41 of this rule) by the indicated dates:

STEP ONE: The system shall conduct initial monitoring (as required by sections 37(d)(1) and 38(c) of this rule) during two (2) consecutive six (6) month monitoring periods by January 1, 1993.

STEP TWO: The system shall complete corrosion control studies (as required by section 41(c) of this rule) by July 1, 1994.

STEP THREE: The commissioner shall designate optimal corrosion control treatment (as required by section 41(d) of this rule) by January 1, 1995.

STEP FOUR: The system shall install optimal corrosion control treatment (as required by section 41(e) of this rule) by January 1, 1997.

STEP FIVE: The system shall complete follow-up sampling (as required by sections 37(e) and 38(d) of this rule) by January 1, 1998.

STEP SIX: The commissioner shall review installation of treatment and designate optimal water quality control parameters (as required by section 41(f) of this rule) by July 1, 1998.

STEP SEVEN: The system shall operate in compliance with the optimal water quality control parameters specified by the commissioner (as required by section 41(g) of this rule) and continue to conduct tap sampling (as required by sections 37(d)(3) and 38(e) of this rule).

(e) Except as provided in subsection (b), small and medium size systems shall complete the following corrosion control treatment steps by the indicated time periods:

STEP ONE: The system shall conduct initial tap sampling until the system either exceeds the lead and copper action level or becomes eligible for reduced monitoring under section 37(d)(4) of this rule. A system exceeding the lead or copper action level shall recommend optimal corrosion control treatment within six (6) months after it exceeds one (1) of the action levels.

STEP TWO: Within twelve (12) months after a system exceeds the lead or copper action level, the commissioner may require the system to perform corrosion control studies. If the commissioner does not require the system to perform such studies, optimal corrosion control treatment shall be specified by the commissioner within the following time frames:

(A) For medium size systems, within eighteen (18) months after such system exceeds the lead or copper action level.

(B) For small systems, within twenty-four (24) months after such system exceeds the lead or copper action level.

STEP THREE: If the commissioner requires a system to perform corrosion control studies under STEP TWO, the system shall complete the studies within eighteen (18) months after the commissioner requires that such studies be conducted.

STEP FOUR: If the system has performed corrosion control studies under STEP TWO, the commissioner shall designate optimal corrosion control treatment within six (6) months after completion of STEP THREE.

STEP FIVE: The system shall install optimal corrosion control treatment within twenty-four (24) months after the commissioner designates optimal corrosion control treatment.

STEP SIX: The system shall complete follow-up sampling within thirty-six (36) months after the commissioner designates optimal corrosion control treatment.

STEP SEVEN: The commissioner shall review the system's installation of treatment and designate optimal water quality control parameters within six (6) months after completion of STEP SIX.

STEP EIGHT: The system shall operate in compliance with the optimal water quality control parameters designated by the commissioner and continue to conduct tap sampling.

(Water Pollution Control Board; 327 IAC 8-2-40; filed Aug 24, 1994, 8:15 a.m.: 18 IR 74; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 942)

327 IAC 8-2-41 Corrosion control treatment

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 41. (a) Each system shall complete the corrosion control treatment requirements described in this section which are applicable to such system under section 40 of this rule. Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, small and medium size water systems exceeding the lead or copper action level shall recommend installation of one (1) or

more of the corrosion control treatments listed in subsection (c)(1) which the system believes constitutes optimal corrosion control for that system. The commissioner may require the system to conduct additional water quality parameter monitoring in accordance with section 38(c) of this rule to assist the commissioner in reviewing the system's recommendation.

(b) The commissioner may require any small or medium size system that exceeds the lead or copper action level to perform corrosion control studies under subsection (c) to identify optimal corrosion control treatment for the system.

(c) Requirements for the performance of corrosion control studies shall be as follows:

(1) Any public water system performing corrosion control studies shall evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that system:

(A) Alkalinity and pH adjustment.

(B) Calcium hardness adjustment.

(C) The addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

(2) The water system shall evaluate each of the corrosion control treatments using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on analogous treatments with other systems of similar size, water chemistry, and distribution system configuration.

(3) The water system shall measure the following water quality parameters in any tests conducted under subdivision (2) before and after evaluating the corrosion control treatments listed in subdivision (1):

(A) Lead.

(B) Copper.

(C) pH.

(D) Alkalinity.

(E) Calcium.

(F) Conductivity.

(G) Orthophosphate (when an inhibitor containing a phosphate compound is used).

(H) Silicate (when an inhibitor containing a silicate compound is used).

(I) Water temperature.

(4) The water system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one (1) of the following:

(A) Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another water system with comparable water quality and characteristics.

(B) Data and documentation demonstrating that a water system has previously attempted to evaluate a particular corrosion control treatment and has found the treatment is ineffective or adversely affects other water quality treatment processes, or both.

(5) The water system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(6) On the basis of an analysis of the data generated during each evaluation, the water system shall recommend to the commissioner in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system. The water system shall provide a rationale for its recommendation along with all supporting documentation specified in subdivisions (1) through (5).

(d) Requirements for the designation of optimal corrosion control treatment shall be as follows:

(1) Based upon consideration of available information including, where applicable, studies performed under subsection (c) and a system's recommended treatment alternative, the commissioner shall either approve the corrosion control treatment option recommended by the system or designate alternative corrosion control treatments from among those listed in subsection (c)(1). When designating optimal treatment, the commissioner shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

(2) The commissioner shall notify the system of its decision on optimal corrosion control treatment in writing and explain the basis for this determination. If the commissioner requests additional information to aid the review, the water system shall provide the information.

(e) Each system shall properly install and operate throughout its distribution system the optimal corrosion control treatment designated by the commissioner under subsection (d).

(f) The commissioner shall evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the water system and determine whether the system has properly installed and operated the optimal corrosion control treatment designated by the commissioner in subsection (d). Upon reviewing the results of tap water and water quality parameter monitoring by the system, both before and after the system installs optimal corrosion control treatment, the commissioner shall designate the following:

(1) A minimum value or range of values for pH measured at each entry point to the distribution system.

(2) A minimum pH value, measured in all tap samples. Such value shall be equal to or greater than seven (7.0) unless the

commissioner determines that meeting a pH level of seven (7.0) is not technologically feasible or is not necessary for the system to optimize corrosion control.

(3) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the commissioner determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system.

(4) If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity measured at each entry point to the distribution system and in all tap samples.

(5) If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium measured in all tap samples.

The values for the applicable water quality control parameters listed in this subsection shall be those the commissioner determines to reflect optimal corrosion control treatment for the system. The commissioner may designate values for additional water quality control parameters determined by the commissioner to reflect optimal corrosion control for the system. The commissioner shall notify the system in writing of these determinations and explain the basis for the decisions.

(g) All systems shall maintain water quality parameter values at or above minimum values or within ranges designated by the commissioner under subsection (f) in each sample collected under section 38(e) of this rule. If the water quality parameter value of any sample is below the minimum value or outside the range designated by the commissioner, then the system is out of compliance with this subsection. As specified in section 38(e) of this rule, the system may take a confirmation sample for any water quality parameter value no later than three (3) days after the first sample. If a confirmation sample is taken, the result must be averaged with the first sampling result and the average must be used for any compliance determinations under this subsection. The commissioner has the discretion to delete results of obvious sampling errors from this calculation.

(h) Upon its own initiative or in response to a request by a water system or other interested party, the commissioner may modify its determination of the optimal corrosion control treatment under subsection (d) or optimal water quality control parameters under subsection (f). A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The commissioner may modify the determination where the commissioner concludes that such change is necessary to ensure that the system continues to optimize corrosion control treatment. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the commissioner's decision, and provide an implementation schedule for completing the treatment modifications. (*Water Pollution Control Board; 327 IAC 8-2-41; filed Aug 24, 1994, 8:15 a.m.: 18 IR 75*)

327 IAC 8-2-42 Source water treatment requirements

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 42. (a) Systems shall complete the applicable source water monitoring and treatment requirements (described in the referenced portions of subsection (b), and in sections 37 and 39 of this rule) by the following deadlines:

STEP ONE: A system exceeding the lead or copper action level shall complete lead and copper source water monitoring (as required by section 39(b) of this rule) and make a treatment recommendation to the commissioner (as required by subsection (b)(1)) within six (6) months after exceeding the lead or copper action level.

STEP TWO: The commissioner shall make a determination regarding source water treatment (as required by subsection (b)(2)) within six (6) months after submission of monitoring results under STEP ONE.

STEP THREE: If the commissioner requires installation of source water treatment, the system shall install the treatment (as required by subsection (b)(3)) within twenty-four (24) months after completion of STEP TWO.

STEP FOUR: The system shall complete follow-up tap water monitoring (as required by section 37(d)(2) of this rule) and source water monitoring (as required by section 39(c) of this rule) within thirty-six (36) months after completion of STEP TWO.

STEP FIVE: The commissioner shall review the system's installation and operation of source water treatment and specify maximum permissible source water levels (as required by subsection (b)(4)) within six (6) months after completion of STEP FOUR.

STEP SIX: The system shall operate in compliance with the maximum permissible lead and copper source water levels (as required by subsection (b)(4)) specified by the commissioner and continue source water monitoring (as required by section 39(d) of this rule).

(b) Description of source water treatment requirements shall be as follows:

(1) Any system which exceeds the lead or copper action level shall recommend in writing to the commissioner the installation and operation of one (1) of the source water treatments listed in subdivision (2). A system may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels at users' taps.

(2) The commissioner shall complete an evaluation of the results of all source water samples submitted by the water system to determine whether source water treatment is necessary to minimize lead or copper levels in water delivered to users' taps. If the commissioner determines that treatment is needed, the commissioner shall either require installation and operation of the source water treatment recommended by the system (if any) or require the installation and operation of another source water treatment from among

the following:

- (A) Ion exchange.
- (B) Reverse osmosis.
- (C) Lime softening.
- (D) Coagulation/filtration.

If the commissioner requests additional information to aid in the review, the water system shall provide the information by the date specified by the commissioner in the request. The commissioner shall notify the system in writing of the determination and set forth the basis for the decision.

(3) Each system shall properly install and operate the source water treatment designated by the commissioner under subdivision (2).

(4) The commissioner shall review the source water samples taken by the water system both before and after the system installs source water treatment, and determine whether the system has properly installed and operated the source water treatment designated by the commissioner. Based upon the review, the commissioner shall designate the maximum permissible lead and copper concentrations for finished water entering the distribution system. Such levels shall reflect the contaminant removal capability of the treatment properly operated and maintained. The commissioner shall notify the system in writing and explain the basis for the decision.

(5) Each water system shall maintain lead and copper levels below the maximum permissible concentrations designated by the commissioner at each sampling point monitored in accordance with section 39 of this rule. The system is out of compliance with this subdivision if the level of lead or copper at any sampling point is greater than the maximum permissible concentration designated by the commissioner.

(6) Upon its own initiative or in response to a request by a water system or other interested party, the commissioner may modify the determination of the source water treatment under subdivision (2), or maximum permissible lead and copper concentrations for finished water entering the distribution system under subdivision (4). A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The commissioner may modify the determination where the commissioner concludes that such change is necessary to ensure that the system continues to minimize lead and copper concentrations in source water. A revised determination shall be made in writing, setting forth the new treatment requirements, explaining the basis for the decision, and providing an implementation schedule for completing the treatment modifications.

(Water Pollution Control Board; 327 IAC 8-2-42; filed Aug 24, 1994, 8:15 a.m.: 18 IR 77)

327 IAC 8-2-43 Lead service line replacement

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 43. (a) Systems that fail to meet the lead action level in tap samples taken under section 37(d)(2) of this rule, after installing corrosion control treatment or source water treatment, or both (whichever sampling occurs later), shall replace lead service lines in accordance with the requirements of this section. If a system is in violation of section 40 or 42 of this rule for failure to install source water or corrosion control treatment, the commissioner may require the system to commence lead service line replacement under this section after the date by which the system was required to conduct monitoring under section 37(d)(2) of this rule has passed.

(b) A system shall replace annually at least seven percent (7%) of the initial number of lead service lines in place at the time the replacement program begins. The system shall identify the initial number of lead service lines in its distribution system based upon a materials evaluation, including the evaluation required under section 37(a) of this rule. The first year of lead service line replacement shall begin on the date the action level was exceeded in tap sampling referenced in subsection (a).

(c) A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, taken under section 37(b)(3) of this rule, is less than or equal to fifteen-thousandths (0.015) milligram per liter.

(d) A water system shall replace the entire service line (up to the building inlet) unless it demonstrates to the satisfaction of the commissioner under subsection (e) that it controls less than the entire service line. In such cases, the system shall replace the portion of the line which the commissioner determines is under the system's control. The system shall notify the user served by the line that the system will replace the portion of the service line under its control and shall offer to replace the building owner's portion of the line, but is not required to bear the cost of replacing the building owner's portion of the line. For buildings where only a portion of the line is replaced, the water system shall inform the residents that the system will collect a first flush tap water sample after partial replacement of the service line is completed if the residents so desire. In cases where the residents accept the offer, the system shall collect the sample and report the results to the residents within fourteen (14) days following partial lead service line replacement.

(e) A water system is presumed to control the entire lead service line (up to the building inlet) unless the system demonstrates to the satisfaction of the commissioner, in a letter submitted under section 46(e)(4) of this rule that it does not have any of the following forms of control over the entire line (as defined by state statutes, municipal ordinances, public service contracts, or other applicable legal authority):

- (1) Authority to set standards for construction, repair, or maintenance of the line.
- (2) Authority to replace, repair, or maintain the service line.
- (3) Ownership of the service line.

The commissioner shall review the information supplied by the system and determine whether the system controls less than the entire service line and, in such cases, shall determine the extent of the system's control. The commissioner's determination shall be in writing and explain the basis for the decision.

(f) The commissioner may require a system to replace lead service lines on a shorter schedule than that required by this section, taking into account the number of lead service lines in the system, where a shorter replacement schedule is feasible. The commissioner shall make this determination in writing and notify the system of the determination within six (6) months after the system is triggered into lead service line replacement based on monitoring referenced in subsection (a).

(g) Any system may cease replacing lead service lines whenever first draw samples collected under section 37(d)(3) of this rule meet the lead action level during each of two (2) consecutive monitoring periods and the system submits the results to the commissioner. If the lead tap samples in any such water system thereafter exceeds the lead action level, the system shall recommence replacing lead service lines under subsection (b).

(h) To demonstrate compliance with subsections (a) through (d), a system shall report to the commissioner the information specified in section 46(e) of this rule. (*Water Pollution Control Board; 327 IAC 8-2-43; filed Aug 24, 1994, 8:15 a.m.: 18 IR 78; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 944*)

327 IAC 8-2-44 Public education and supplemental monitoring; lead and copper

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 44. (a) A water system that exceeds the lead action level based on tap water samples collected in accordance with section 37 of this rule shall deliver the public education materials contained in subsections (b) and (c) in accordance with the requirements in subsection (d).

(b) A water system shall include the text as established in this subsection in all the printed materials it distributes through its lead public education program. Any additional information presented by a system shall be consistent with the following information and be in plain English that can be understood by lay persons:

(1) Introduction. The Indiana department of environmental management (IDEM) and (insert name of water supplier) are concerned about lead in your drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above the action level of fifteen (15) parts per billion or fifteen-thousandths (0.015) milligram of lead per liter of water. Under state law we are required to have a program in place to minimize lead in your drinking water by (insert date when corrosion control will be completed for your system). This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace each lead service line that we control if the line contributes lead concentrations of more than fifteen (15) parts per billion after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation, please give us a call at (insert water systems phone number). This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

(2) Health effects of lead. Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery, porcelain, and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells, and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development in growing bodies. In addition, a child at play often comes in contact with sources of lead contamination, like dirt and dust, that rarely affect an adult. It is important to wash children's hands and toys often, and try to make sure they only put food in their mouths.

(3) Lead in drinking water.

(A) Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up twenty percent (20%) or more of a person's total exposure to lead.

(B) Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome plated brass faucets, and in some cases, pipes made of lead that connect your house to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than two-tenths percent (0.2%) lead and restricted the lead content of faucets, pipes, and other plumbing material to eight percent (8%).

(C) When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

(4) Steps you can take in the home to reduce exposure to lead in drinking water.

(A) Despite our best efforts mentioned earlier to control water corrosivity and remove lead from the water supply, lead levels in some homes or buildings can be high. To find out whether you need to take action in your own home, have your drinking water tested to determine if it contains high concentrations of lead. Testing the water is essential because you cannot see, taste, or smell lead in drinking water. Some local laboratories that can provide this service are listed at the end of this booklet. For more information on having your water tested, please call (insert phone number of water system).

(B) If a water test indicates that the drinking water drawn from a tap in your home contains lead above fifteen (15) parts per billion, then you should take the following precautions:

(i) Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six (6) hours. The longer the water resides in your home's plumbing, the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about fifteen (15) to thirty (30) seconds. If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one (1) minute, before drinking. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one (1) or two (2) gallons of water and costs less than (insert a cost estimate based on two (2) times a day for thirty (30) days) per month. To conserve water, fill a couple of bottles for drinking water after flushing the tap, and whenever possible use the first flush water to wash the dishes or water the plants. If you live in a high rise building, letting the water flow before using it may not work to lessen your risk from lead. The plumbing systems have more and sometimes longer pipes than in smaller buildings. Ask your landlord for help in finding the source of lead and for advice on reducing the lead level.

(ii) Try not to cook with or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw it from the cold tap and heat it on the stove.

(iii) Remove loose lead solder and debris from the plumbing materials in newly constructed homes, or homes where the plumbing has been recently replaced, by removing the faucet strainers from all taps and running the water for three (3) to five (5) minutes. Thereafter, periodically remove the strainers and flush out any debris that has accumulated over time.

(iv) If your copper pipes are joined with lead solder that has been installed illegally since it was banned in 1986, contact the plumber who did the work and request that he or she replace the solder with lead-free solder. Lead solder looks dull gray, and when scratched with a key looks shiny. In addition, notify the Indiana department of environmental management about the violation.

(v) Determine whether the service line that connects your home or apartment to the water main is made of lead. The best way to determine this is to hire a licensed plumber to inspect the line or by contacting the plumbing contractor that installed the line. You can identify the plumbing contractor by checking the city's record of building permits which should be kept in the files of (insert the department that handles building permits). A licensed plumber can, at the same time, check to see if your home's plumbing contains lead solder, lead pipes, or fittings that contain lead. The public water system that delivers the water to your home should also maintain records of the materials in the distribution system. If the service line that connects your dwelling to the water main contributes more than fifteen (15) parts per billion to drinking water, after our comprehensive treatment program is in place, we are required to replace the line. If the line is only partially controlled by the (insert name of the water system that controls the line), we are required to provide you with information on how to replace your portion of the service line, offer to replace that portion of the line at your expense, and take a follow-up tap water sample within fourteen (14) days of the replacement. Acceptable replacement alternatives include copper, steel, iron, and plastic pipes.

(vi) Have an electrician check your wiring. If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine whether your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself, because improper wiring can cause electrical shock and fire hazards.

(C) The steps described above will reduce the lead concentrations in your drinking water. However, if a water test indicates that the drinking water coming from your tap contains lead in excess of fifteen (15) parts per billion after flushing, or after we have

completed our actions to minimize lead levels, then you may want to take the following additional measures:

(i) Purchase or lease a home treatment device. Home treatment devices are limited in that each unit treats only the water that flows from the faucet to which it is connected, and all the devices require periodic maintenance and replacement. Devices such as reverse osmosis systems or distillers can effectively remove lead from your drinking water. Some activated carbon filters may reduce lead levels at the tap, however, all lead reduction claims should be investigated. Be sure to check the actual performance of a specific home treatment device before and after installing the unit.

(ii) Purchase bottled water for drinking and cooking.

(D) You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

(i) (insert the name of city or county department of public utilities) at (insert phone number) can provide you with information about your community's water supply and a list of local laboratories that have been certified by the state for testing water quality;

(ii) (insert the name of city or county department that issues building permits) at (insert phone number) can provide you with information about building permit records that should contain the names of plumbing contractors that plumbed your home; and

(iii) (insert name of the state department of public health) at (insert phone number) or the (insert the name of the city or county health department) at (insert phone number) can provide you with information about the health effects of lead and how you can have your child's blood tested.

(E) The following is a list of some state approved laboratories in your area that you can call to have your water tested for lead. (Insert names and addresses of at least two (2) laboratories.)

(c) A water system shall include the following information in all public service announcements submitted under its lead public education program to television and radio stations for broadcasting:

(1) Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why I urge you to do what I did. I had my water tested for (insert free or cost in dollars per sample). You can contact the (insert the name of the city or water system) for information on testing and on simple ways to reduce your exposure to lead in drinking water.

(2) To have your water tested for lead or to get more information about this public health concern, please call (insert the phone number of the city or water system).

(d) Requirements for delivery of a public education program shall be as follows:

(1) In communities where a significant portion of the population speaks a language other than English, public education materials shall be communicated in the appropriate language.

(2) A community water system that fails to meet the lead action level on the basis of tap water samples collected in accordance with section 37 of this rule shall, within sixty (60) days, do the following:

(A) Insert policies in each customer's water utility bill containing the information in subsection (b), along with the following alert on the water bill itself in large print: "SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION."

(B) Submit the information in subsection (b) to the editorial department of the major daily and weekly newspapers circulated throughout the community.

(C) Deliver pamphlets or brochures, or both, that contain the public education materials in subsection (b)(2) and (b)(4) to facilities and organizations, including the following:

(i) Public schools and local school boards.

(ii) City or county health department.

(iii) Women, infants, and children and head start programs, whenever available.

(iv) Public or private hospitals and clinics.

(v) Pediatricians.

(vi) Family planning clinics.

(vii) Local welfare agencies.

(D) Submit the public service announcement in subsection (c) to at least five (5) of the radio and television stations with the largest audiences that broadcast to the community served by the water system.

(3) A community water supply system shall repeat the tasks contained in subdivision (2)(A) through (2)(C) every twelve (12) months, and the tasks contained in subdivision (2)(D) every six (6) months for as long as the system exceeds the lead action level.

(4) Within sixty (60) days after it exceeds the lead action level, a nontransient noncommunity water system shall deliver the public education materials contained in subsection (b)(1), (b)(2), and (b)(4) as follows:

(A) Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system.

(B) Distribute informational pamphlets or brochures, or both, on lead in drinking water to each person served by the nontransient noncommunity water system.

(5) A nontransient noncommunity water system shall repeat the tasks contained in subdivision (4) at least once during each calendar year in which the system exceeds the lead action level.

(6) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six (6) month monitoring period conducted under section 37 of this rule. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(e) A water system that fails to meet the lead action level on the basis of tap samples collected in accordance with section 37 of this rule shall offer to sample the tap water of any customer who requests it. The system is not required to pay for collecting or analyzing the sample, and the system is not required to collect and analyze the sample itself. (*Water Pollution Control Board; 327 IAC 8-2-44; filed Aug 24, 1994, 8:15 a.m.: 18 IR 79; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532*)

327 IAC 8-2-45 Analytical methods; lead and copper

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 45. (a) Analysis for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature shall be conducted using the following methods:

(1) Lead¹ as follows:

(A) Atomic absorption; furnace technique, Method D3559-90D* or Method 3113B*.

(B) Inductively-coupled plasma; mass spectrometry, Method 200.8*.

(C) Atomic absorption; platform furnace technique, Method 200.9*.

(2) Copper¹ as follows:

(A) Atomic absorption; furnace technique, Method D1688-90C* or Method 3113B*.

(B) Atomic absorption; direct aspiration, Method D1688-90A* or Method 3111B*.

(C) Inductively-coupled plasma; Method 200.7* or Method 3120B*.

(D) Inductively-coupled plasma; mass spectrometry, Method 200.8*.

(E) Atomic absorption; platform furnace, Method 200.9*.

(3) pH, electrometric, Method 150.1*, Method 150.2*, Method D1293-84*, or Method 4500-H⁺-B*.

(4) Conductivity, conductance, Method D1125-91A* or Method 2510B*.

(5) Calcium as follows:

(A) EDTA titrimetric, Method D511-93A* or 3500-Ca-D*.

(B) Atomic absorption; direct aspiration, Method D511-93B* or 3111-B*.

(C) Inductively-coupled plasma, Method 200.7 or Method 3120B*.

(6) Alkalinity as follows:

(A) Titrimetric, Method D1067-92B* or Method 2320B.

(B) Electrometric titration, Method I-1030-85*.

(7) Orthophosphate, unfiltered, no digestion or hydrolysis as follows:

(A) Colorimetric, automated, ascorbic acid, Method 365.1* or 4500-P-F*.

(B) Colorimetric, ascorbic acid, single reagent, Method D515-88A* or Method 4500-P-E*.

(C) Colorimetric, phosphomolybdate, Method I-1601-85* or automated-segmented flow, Method I-2601-90*, or automated discrete, Method I-2598-85*.

(D) Ion chromatography, Method 300.0*, Method D4327-91*, or Method 4110*.

(8) Silica as follows:

(A) Colorimetric, molybdate blue, Method I-1700-85 or automated-segmented flow, Method I-2700-85*.

(B) Colorimetric, Method D859-88*.

(C) Molybdosilicate, Method 4500-Si-D*.

(D) Heteropoly blue, Method 4500-Si-E*.

(E) Automated method for molybdate-reactive silica, Method 4500-Si-F*.

(F) Inductively-coupled plasma, Method 200.7* or Method 3120B*.

(9) Temperature, thermometric, Method Method 2550B*.

(b) Analysis under this section shall only be conducted by laboratories that have been certified by EPA or the state. To obtain certification to conduct analysis for lead and copper, laboratories must do the following:

(1) Analyze performance evaluation samples which include lead and copper provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the state.

(2) Achieve quantitative acceptance limits as follows:

- (A) For lead, plus or minus thirty percent (30%) of the actual amount in the performance evaluation sample when the actual amount is greater than or equal to five-thousandths (0.005) milligram per liter.
- (B) For copper, plus or minus ten percent (10%) of the actual amount in the performance evaluation sample when the actual amount is greater than or equal to five-thousandths (0.005) milligram per liter.
- (3) Achieve method detection limits according to the procedures in Appendix B of 40 CFR 136 (July 1, 1991) as follows:
 - (A) For lead, one one-thousandth (0.001) milligram per liter (only if source water compositing is done under section 4.1(c)(4) of this rule).
 - (B) For copper, one one-thousandths (0.001) milligram per liter when atomic absorption direct aspiration is used (only if source water compositing is done under section 4.1(c)(4) of this rule).
- (4) Be currently certified by EPA or the state to perform analyses to the specifications described in subsection (a)(2).
- (c) The commissioner has the authority to allow the use of previously collected monitoring data for purposes of monitoring if the data were collected and analyzed in accordance with the requirements of sections 36 through 44 of this rule, this section, and sections 46 and 47 of this rule.
- (d) All lead levels measured between the practical quantitation level and the method detection limit must be either reported as measured or they can be reported as one-half (**2**) the practical quantitation level (twenty-five thousandths (0.025) milligram per liter). All levels below the lead method detection level must be reported as zero (0).
- (e) All copper levels measured between the practical quantitation level and the method detection limit must be either reported as measured or they can be reported as one-half (**2**) the practical quantitation level (twenty-five thousandths (0.025) milligram per liter). All levels below the copper method detection limit must be reported as zero (0).

¹ For analyzing lead and copper, the technique applicable to total metals must be used and samples cannot be filtered.

*Methods referenced in this section may be obtained as follows:

- (1) Methods 150.1 and 150.2, available from U.S. EPA, EMSL, Cincinnati, Ohio 45268, (513) 569-7586.
- (2) Methods 200.7, 200.8, and 200.9 may be found in "Methods for the Determination of Metals in Environmental Samples-Supplement 1", EPA-600/R-94-111, May 1994, available from NTIS, PB-94-184942, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.
- (3) Methods D3559-90D, D1688-90C, D1688-90A, D1293-84, D1125-91A, D511-93A, D511-93B, D1067-92B, D515-88A, D4327-91, and D859-88 may be found in "Annual Book of ASTM Standards", Vols. 11.01 and 11.02, 1994, American Society for Testing and Materials, available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
- (4) Methods 3113B, 3111B, 3120B, 4500-H⁺-B, 2510B, 3500-Ca-D, 2320B, 4500-P-F, 4500-P-E, 4110, 4500-Si-D, 4500-Si-E, 4500-Si-F, and 2550B may be found in "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.
- (5) Methods I-1030-85, I-1601-85, I-2601-90, I-2598-85, I-1700-85, and I-2700-85, available from Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225-0425.
- (6) Methods 365.1 and 300.0 may be found in "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993, available from NTIS, PB94-121811, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

These methods are also available for copying at the Indiana Department of Environmental Management, Office of Water Management, 100 North Senate Avenue, N1254, Indianapolis, IN 46204. (*Water Pollution Control Board; 327 IAC 8-2-45; filed Aug 24, 1994, 8:15 a.m.: 18 IR 82; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532; filed Aug 25, 1997, 8:00 a.m.: 21 IR 72*)

327 IAC 8-2-46 Reporting requirements; lead and copper

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 46. (a) Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring shall be as follows:

- (1) A water system shall report the following information for all tap water samples within the first ten (10) days following the end of each applicable monitoring period specified in sections 37 and 38 of this rule (i.e., every six (6) months, annually, or every three (3) years):
 - (A) The results of all tap samples for lead and copper, including the location of each site and the criteria under section 37(a)(3) through 37(a)(7) of this rule, or any, under which the site was selected for the system's sampling pool.
 - (B) A certification that each first draw sample collected by the water system is one (1) liter in volume and, to the best of their knowledge, has stood motionless in the service line, or in the interior plumbing of a sampling site, for at least six (6) hours.

(C) Where residents collected samples, a certification that each tap sample collected by the residents was taken after the water system informed them of proper sampling procedures specified in section 37(b)(2) of this rule.

(D) The ninetieth percentile lead and copper concentrations measured from among all lead and copper tap samples collected during each monitoring period (calculated in accordance with section 36(c)(3) of this rule).

(E) With the exception of initial tap sampling conducted under section 37(d)(1) of this rule, the system shall designate any site which was not sampled during previous monitoring periods and include an explanation of why sampling sites have changed.

(F) The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under section 38(c) through 38(f) of this rule.

(G) The results of all samples collected at the entry point to the distribution system for applicable water quality parameters under section 38(c) through 38(f) of this rule.

(2) By the applicable date in section 37(d)(1) of this rule for commencement of monitoring, each community water system which does not complete its targeted sampling pool with tier one (1) sampling sites meeting the criteria in section 37(a)(3) of this rule shall send a letter to the commissioner justifying its selection of tier two (2) or tier three (3) sampling sites, or both, under section 37(a)(4) or 37(a)(5) of this rule, or both.

(3) By the applicable date in section 37(d)(1) of this rule for commencement of monitoring, each nontransient noncommunity water system which does not complete its sampling pool with tier one (1) sampling sites meeting the criteria in section 37(a)(6) of this rule shall send a letter to the commissioner justifying its selection of sampling sites under section 37(a)(7) of this rule.

(4) By the applicable date in section 37(d)(1) of this rule for commencement of monitoring, each water system with lead service lines that is not able to locate the number of sites served by such lines required under section 37(a)(9) of this rule shall send a letter to the commissioner demonstrating why it was unable to locate a sufficient number of sites based on the information listed in section 37(a)(2) of this rule.

(5) Each water system that requests that the commissioner reduce the number and frequency of sampling shall provide the information required under section 37(d)(4) of this rule.

(b) Source water monitoring reporting requirements shall be as follows:

(1) A water system shall report the sampling results for all source water samples collected in accordance with section 39 of this rule within the first ten (10) days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle) specified in section 39 of this rule.

(2) With the exception of the first round of source water sampling conducted under section 39(b) of this rule, the system shall specify any site which was not sampled during previous monitoring periods and include an explanation of why the sampling point has changed.

(c) This subsection establishes requirements for corrosion control treatment reporting. By the applicable dates under section 40 of this rule, systems shall report the following information:

(1) For systems demonstrating that they already have optimized corrosion control, information required in section 40(b)(2) or 40(b)(3) of this rule.

(2) For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment under section 41(a) of this rule.

(3) For systems required to evaluate the effectiveness of corrosion control treatments under section 41(c) of this rule, the information required under that subsection.

(4) For systems required to install optimal corrosion control designated by the commissioner under section 41(d) of this rule, a letter certifying that the system has completed installing that treatment.

(d) This subsection establishes requirements for source water treatment reporting. By the applicable dates in section 42 of this rule, systems shall provide the following information to the commissioner:

(1) If required under section 42(b)(1) of this rule, their recommendation regarding source water treatment.

(2) For systems required to install source water treatment under section 42(b)(2) of this rule, a letter certifying that the system has completed installing the treatment designated by the commissioner within twenty-four (24) months after the commissioner designated the treatment.

(e) This subsection establishes requirements for lead service line replacement reporting. Systems shall report the following information to the commissioner to demonstrate compliance with the requirements of section 43 of this rule:

(1) Within twelve (12) months after a system exceeds the lead action level in sampling referred to in section 43(a) of this rule, the system shall demonstrate in writing to the commissioner that it has conducted a material evaluation, including the evaluation in section 37(a) of this rule, to identify the initial number of lead service lines in its distribution system, and shall provide the commissioner with

the system's schedule for replacing annually at least seven percent (7%) of the initial number of lead service lines within its distribution system.

(2) Within twelve (12) months after a system exceeds the lead action level in sampling referred to in section 43(a) of this rule, and every twelve (12) months thereafter, the system shall demonstrate to the commissioner in writing that the system has done either of the following:

(A) Replaced in the previous twelve (12) months, at least seven percent (7%) of the initial lead service lines (or a greater number of lines specified by the commissioner under section 43(f) of this rule) in its distribution system.

(B) Conducted sampling which demonstrates that the lead concentration in all service line samples from an individual line, taken under section 37(b)(3) of this rule, is less than or equal to fifteen-thousandths (0.015) milligram per liter. In such cases, the total number of lines replaced and which meet the criteria in section 43(b) of this rule, shall equal at least seven percent (7%) of the initial number of lead lines identified under subsection (a) (or the percentage specified by the commissioner under section 43(f) of this rule).

(3) The annual letter submitted to the commissioner under subdivision (2) shall contain the following information:

(A) The number of lead service lines scheduled to be replaced during the previous year of the system's replacement schedule.

(B) The number and location of each lead service line replaced during the previous year of the system's replacement schedule.

(C) If measured, the water lead concentration and location of each service line sampled, the sampling method, and the date of sampling.

(4) As soon as practicable, but in no case later than three (3) months after a system exceeds the lead action level in sampling referred to in section 43(a) of this rule, any system seeking to rebut the presumption that it has control over the entire lead service line under section 43(d) of this rule shall submit a letter to the commissioner describing the legal authority, such as state statutes, municipal ordinances, public service contracts, or other applicable legal authority which limits the system's control over the service lines and the extent of the system's control.

(f) This subsection establishes requirements for public education program reporting. By December 31 of each year, any water system that is subject to the public education requirements in section 44 of this rule shall submit a letter to the commissioner demonstrating that the system has delivered the public education materials that meet the content requirements in section 44(a) and 44(b) of this rule and the delivery requirements in section 44(c) of this rule. This information shall include a list of all the newspapers, radio stations, television stations, facilities, and organizations to which the system delivered public education materials during the previous year. The water system shall submit the letter required by this subsection annually for as long as it exceeds the lead action level.

(g) Any system that collects sampling data in addition to that required by sections 36 through 45 of this rule, this section, and section 47 of this rule shall report the results to the commissioner within the first ten (10) days following the end of the applicable monitoring period under sections 37 through 39 of this rule during which the samples are collected. (*Water Pollution Control Board; 327 IAC 8-2-46; filed Aug 24, 1994, 8:15 a.m.: 18 IR 84; Filed Oct 24, 1997, 4:30 p.m.: 21 IR 945*)

327 IAC 8-2-47 Record keeping requirements; lead and copper

Authority: IC 13-1-3-4; IC 13-7-2-15; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7

Sec. 47. Any system subject to the requirements of sections 37 through 44 of this rule shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, commissioner determinations, and any other information required by sections 37 through 44 of this rule. Each water system shall retain the records required by this section for no fewer than twelve (12) years. (*Water Pollution Control Board; 327 IAC 8-2-47; filed Aug 24, 1994, 8:15 a.m.: 18 IR 86*)

Rule 3. Public Water Supply Construction Permits

327 IAC 8-3-1 Definitions

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-1.5; IC 13-7-1; IC 13-7-7-5; IC 13-7-14-5

Sec. 1. In addition to the definitions contained in IC 13-7-1, IC 13-1-3-1.5, and 327 IAC 1, the following definitions apply throughout this rule:

(1) "Distribution system" means the piping, storage structures, pumps, and controls used to deliver water to the public.

(2) "Experimental permit" means a construction permit issued for an installation, treatment process, or technique for which extensive experience and records of use have not been accumulated to allow accurate prediction of the effluent water quality.

(3) "Noncommunity water system" means a public water system which has at least fifteen (15) service connections used by

nonresidents, or which regularly serves twenty-five (25) or more nonresident individuals daily for at least sixty (60) days per year.

(4) "Nontransient noncommunity water system (NTNCWS)" means a public water system that regularly serves the same twenty-five (25) or more persons at least six (6) months per year.

(5) "Peak demand" means the maximum momentary load on a public water system flow during any one (1) hour period of operation.

(6) "Public water system" means a public water supply for the provision to the public of piped water for human consumption, if such system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year. The term public water system includes any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

(7) "Satisfactory quality" means the physical, chemical, and bacteriological quality of drinking water meeting the requirements set forth in this article.

(8) "Satisfactory quantity" means a sufficient quantity of water to provide a minimum pressure of twenty (20) pounds per square inch at all points in the distribution system at all times and including periods of peak demand.

(9) "Water main extension" means any addition of pipe from which water is delivered to the service pipe leading to specific premises. (*Water Pollution Control Board; 327 IAC 8-3-1; filed Sep 24, 1987, 3:00 p.m.: 11 IR 709; filed Oct 22, 1991, 5:00 p.m.: 15 IR 223*)

327 IAC 8-3-2 Permits for construction of public water supplies; exemptions experimental permits

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 2. (a) No person shall cause or allow the construction, installation, or modification of any facility, equipment, or device for any public water supply without having a valid construction permit issued therefor by the commissioner, except as allowed in subsection (b).

(b) Construction permits shall not be required for the following:

(1) Water main extensions of less than two thousand five hundred (2,500) feet in length.

(2) Water main extensions which constitute an increase of less than five percent (5%) of the number of existing customers.

(3) Noncommunities and nontransient noncommunities with water supply service populations under five hundred (500) persons.

(4) Replacement of equipment of similar design and capacity, none of which will change adversely the plant operation, its hydraulic design or waste products, or the distribution system design, operation, or capacity.

(c) Construction permits shall become void if the construction is not started within one (1) year from the date of issuance of the permit.

(d) The commissioner shall have the authority to specify in the permit any limits and conditions necessary to provide an acceptable water works facility, as defined in section 4 of this rule.

(e) The commissioner may revoke any construction permit for noncompliance with the limits and conditions specified in the permit, or if significant and unapproved changes are made in construction that differ from the plans and specifications on which the issuance of the permit was based.

(f) If no action has been taken by the commissioner within sixty (60) days after an application has been filed for a permit, the permit shall be considered granted based on the plans and specifications submitted and on the engineer's certification that such construction following the plans will produce drinking water of satisfactory quality and quantity. A letter by the commissioner written to the owner or design consultant requesting clarification or additional information shall extend the date of filing until adequate response is received.

(g) In order to encourage the development of new or more efficient treatment processes, the following type of construction permits may be issued:

(1) Experimental permits may be issued for installations, treatment processes, or techniques that have not developed extensive experience or records of use in the state of Indiana, provided that the applicant submits clear and conclusive evidence to convince the board that the installation, process, or technique has a reasonable and substantial probability of satisfactory operation.

(2) Regular permits may be issued for installations, treatment processes, or techniques that have been used for sufficient time to show that the installation, treatment process, or technique will produce water of satisfactory quality and quantity.

(h) In emergency cases when it is necessary to start construction immediately, a temporary permit may be issued upon application as set out in section 3(a) through 3(b) of this rule. Such temporary permit shall be valid pending issuance of a regular permit which complies with all requirements of this rule. Temporary permits shall only be issued when droughts, storms, floods, or other natural or manmade disasters impair the ability to deliver satisfactory quantity or quality of drinking water. (*Water Pollution Control Board; 327 IAC 8-3-2; filed Sep 24, 1987, 3:00 p.m.: 11 IR 709; filed Oct 22, 1991, 5:00 p.m.: 15 IR 224*)

327 IAC 8-3-3 Application for permits

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 3. (a) A properly executed application form shall accompany the plans and specifications submitted to the commissioner for the purposes of obtaining a permit. Application forms may be obtained from the commissioner upon request.

(b) Plans, specifications, and applications must be prepared by or under the direct supervision of an engineer registered in Indiana and shall bear his seal and certification that construction of the proposed project following the plans and specifications will produce drinking water satisfactory quality and quantity.

(c) The commissioner may require such specific information as it deems necessary to determine whether the proposed facility will be satisfactory.

(d) An application shall not be considered as filed until all of the information required by 327 IAC 8-3-4 has been received by the commissioner. *Water Pollution Control Board; 327 IAC 8-3-3; filed Sep 24, 1987, 3:00 pm: 11 IR 710)*

327 IAC 8-3-4 Issuance requirements

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 4. The commissioner may reject the application for any permit required by this rule (327 IAC 8-3) unless the applicant submits evidence that:

(1) The facility is designed to be constructed, modified, or installed, and operated in such a manner that it will not violate any of the sanitary or health regulations or requirements existing at the time of application for the permit.

(2) The facility conforms to the design criteria in the "Recommended Standards for Water Works" established by the Great Lakes Upper Mississippi River Board of State Public Health and Environmental Managers, the American Water Works Association (AWWA) standards, or is based on such criteria acceptable to the commissioner which the applicant shows will produce water or satisfactory quality and quantity.

(3) The facility will conform to any additional requirements specified by the commissioner to produce consistently satisfactory results.

(4) The plans for wastewater disposal meet the requirements of the board.

(5) All additional substantiating information requested by the commissioner has been submitted.

(Water Pollution Control Board; 327 IAC 8-3-4; filed Sep 24, 1987, 3:00 pm: 11 IR 710)

327 IAC 8-3-5 Modification or revocation of permits

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-10-5; IC 13-7-14-5

Sec. 5. Permits shall be modified or revoked pursuant to the provision of IC 13-7-10-5. *(Water Pollution Control Board; 327 IAC 8-3-5; filed Sep 24, 1987, 3:00 pm: 11 IR 711)*

327 IAC 8-3-6 Permit no defense to violations

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 6. The possession of any permit authorized by this rule (327 IAC 8-3) shall not be construed to authorize the holder of the permit to violate any law of the state of Indiana or rule. *(Water Pollution Control Board; 327 IAC 8-3-6; filed Sep 24, 1987, 3:00 pm: 11 IR 711)*

327 IAC 8-3-7 Fees

Authority: IC 13-7-7-5; IC 13-7-14-1; IC 13-7-14-2; IC 13-7-14-5; IC 13-7-14-6

Affected: IC 13-7-16-6; IC 36-1-2-23

Sec. 7. (a) The following governmental entities shall be excluded from payment of fee as described in subsection (b):

(1) County, municipality, or township which is defined as a unit under IC 36-1-2-23.

(2) A nonprofit organization.

(3) A conservancy district.

(4) A school corporation that operates a sewage treatment facility.

(5) A regional water or sewage district.

(b) The following fee schedule has been established to defer administrative costs, pursuant to IC 13-7-16-6:

TYPE	PROCESSING FEE
New public water supply treatment plant:	
Ground water:	
Up to 500,000 gallons per day	\$875
Greater than 500,000 gallons per day	\$1,750
Surface water:	

Up to 500,000 gallons per day	\$1,250
Greater than 500,000 gallons per day	\$2,500
Public water supply treatment plant expansion:	
Up to fifty percent (50%) design capacity:	
Greater than 500,000 gallons per day	\$1,250
Up to 500,000 gallons per day	\$625
Greater than fifty percent (50%) design capacity:	
Greater than 500,000 gallons per day	\$2,500
Up to 500,000 gallons per day	\$1,250
Other water treatment facilities:	
Wells	\$500
Pump or pump station	\$100
Chemical addition	\$250
Storage tank	\$200
Miscellaneous process modification	\$50 per process
All water distribution system:	
2,501 - 5,000 linear feet	\$150
5,001 - 10,000 linear feet	\$250
Greater than 10,000 linear feet	\$500

(c) A fee shall be remitted with each application made in accordance with the schedule in subsection (b). Checks shall be made payable to the department of environmental management.

(d) The fee shall not be refundable once staff review and processing of the permit application has commenced. (*Water Pollution Control Board; 327 IAC 8-3-7; filed Oct 22, 1991, 5:00 p.m.: 15 IR 225*)

Rule 4. Approval of Public Water Supply Plans

327 IAC 8-4-1 Public water supply plans; approval by board

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 1. (a) No city, town, county, public institution, firm, corporation, or officer or employee thereof, or other person, shall install or contract for the construction of any public water supply facilities, including water purification or treatment works, or make any material change in any such existing facilities or works, until plans and specifications, together with an engineer report supporting in detail the design set forth in such plans, shall have been submitted to and approved by the commissioner, so far as relates to their sanitary features.

(b) After such plans and specifications have been approved by the commissioner, no material changes in the location, plans, construction, or operation of any such system or works may be made without first submitting to the commissioner a detailed statement of such proposed changes and receiving its approval.

(c) Said plans, specifications, reports and other information shall be submitted of such form and contents as may from time to time be specified by the commissioner.

(d) Whenever information regarding already existing water supply facilities or water treatment works, or regarding the operation and maintenance thereof, may be required by the commissioner, the public officials, or person, firm, or corporation having the works in charge shall promptly furnish such information.

(e) All such plans hereafter to be submitted to the commissioner for approval, shall have been prepared by or under the supervision of a professional engineer legally registered in the state of Indiana, be certified by him and bear his official seal.

(f) Provided, that nothing contained in this rule (327 IAC 8-4) shall apply to water supplies installed, or to be installed in connection with a private dwelling or residence. (*Water Pollution Control Board; 327 IAC 8-4-1; filed Sep 24, 1987, 3:00 pm: 11 IR 711*)

Rule 4.1. Wellhead Protection

327 IAC 8-4.1-1 Definitions

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11-2-43; IC 13-13-2; IC 13-18; IC 15-3-3.5; IC 15-3-3.6; IC 25-17.5-1; IC 25-39-4

Sec. 1. In addition to the definition in IC 13-11-2-43, the following definitions apply throughout this rule:

(1) "Aquifer" means an underground geological formation that has the ability to receive, store, and transmit water in amounts sufficient for the satisfaction of any beneficial use.

(2) "Best management practices" means schedules of activities, prohibitions of practice, treatment requirements, operation and

maintenance procedures, use of containment facilities, and other management practices to prevent or reduce the pollution of waters of the state.

(3) "Calibration" means the process of refining the model representation of the hydrogeologic framework, hydraulic properties, and boundary conditions to achieve a desired degree of correspondence between the model simulation and observations of the ground water flow system.

(4) "Certified professional geologist" means a professional geologist certified by the state of Indiana under IC 25-17.5-1.

(5) "Community public water supply system" or "CPWSS" means a public water supply system that serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

(6) "Conceptual model" means a description of the hydrogeologic system that represents the movement of ground water, for example:

(A) geologic and hydrologic framework;

(B) media type;

(C) physical processes;

(D) hydraulic properties; and

(E) water budget.

(7) "Confined aquifer" means an aquifer in which ground water is confined under pressure that is significantly greater than atmospheric pressure.

(8) "Critical water users" means water users whose immediate health or welfare would be affected in an adverse manner if water use is denied.

(9) "Customers" means number of persons served by the public water supply system.

(10) "Delineation" means a process used to define boundaries of the wellhead protection area.

(11) "Department" means the department of environmental management created under IC 13-13-2.

(12) "Emergency condition" means a condition related to ground water contamination which threatens to disrupt water supply service from a community public water supply system wellfield.

(13) "Hydrogeology" means the study of the geology of ground water, with particular emphasis on the chemistry and movement of water.

(14) "Hydrostratigraphic unit" means a grouping of geologic units of similar hydrogeologic properties, for example, aquifers and confining units.

(15) "Large community public water supply system" means a public water supply system serving greater than fifty thousand (50,000) customers.

(16) "Medium community public water supply system" means a public water supply system serving from three thousand three hundred one (3,301) up to and including fifty thousand (50,000) customers.

(17) "Model" means an investigative technique using a mathematical or physical representation of a system or theory that accounts for all or some of its known properties.

(18) "Pesticide review board" means the Indiana pesticide review board created by IC 15-3-3.5 to collect, analyze, and interpret information on matters relating to the use of pesticides.

(19) "Potential source of contamination" means a facility, site, practice, or activity that possesses the ability to contaminate ground water.

(20) "Public water supply system" or "PWSS" means a public water supply for the provision to the public of piped water for human consumption if such a system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year.

(21) "Qualified ground water scientist" means an individual who possesses a bachelor's degree or higher in the physical sciences, for example, geology or engineering, with a sufficient level of experience to make sound professional judgments regarding site characterization and hydrogeology. This level of experience may be demonstrated by certification or registration as a professional geologist or engineer, either of whom shall have education or professional experience in hydrogeology or ground water hydrology.

(22) "Sanitary setback" means an area established around a CPWSS production well to protect ground water from direct contamination.

(23) "Small community public water supply system" means a public water supply system serving up to and including three thousand three hundred (3,300) customers.

(24) "State chemist" means the office of the Indiana state chemist authorized by IC 15-3-3.5 and IC 15-3-3.6 to administer the use, application, storage, mixing, loading, transportation, and disposal of pesticides in Indiana under those chapters.

(25) "Time of travel" or "TOT" means the calculated length of time a particle of water takes to reach a CPWSS production well from a certain point.

(26) "Time of travel (TOT) threshold" means a threshold determined by the community or CPWSS to suit the hydrogeologic conditions and needs of the community; however, a minimum five (5) year TOT for modeled wellhead protection areas and three thousand (3,000) feet for fixed radius wellhead protection area is allowed.

(27) "Wellhead protection area" or "WHPA" means the surface and subsurface area, delineated by fixed radius, hydrogeological mapping, analytical, semianalytical, or numerical flow/solute transport methods, which contributes water to a CPWSS production well or wellfield and through which contaminants are likely to move through and reach the well within a specified period.

(28) "Wellhead protection program" or "WHPP" means a program to sustain drinking water quality in ground waters that supply public water supply wells and wellfields. The program is mandated by the 1986 amendments to the federal Safe Drinking Water Act, Title II, Section 205, Subsection 1428.

(29) "Well log" means a drilling record that describes the subsurface formations that have been drilled through and gives details of well completion as required by IC 25-39-4 and 310 IAC 16-2-6.

(Water Pollution Control Board; 327 IAC 8-4.1-1; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1723)

327 IAC 8-4.1-2 Applicability of rule

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 2. The WHPP is required for each well or wellfield providing ground water to a CPWSS. *(Water Pollution Control Board; 327 IAC 8-4.1-2; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1724)*

327 IAC 8-4.1-3 Enforcement

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-14-2; IC 13-30

Sec. 3. This rule may be enforced through administrative or judicial proceedings under IC 13-30-3 and the penalty provisions of IC 13-14-2, IC 13-30-4, and IC 13-30-6. *(Water Pollution Control Board; 327 IAC 8-4.1-3; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1724; errata filed Jun 25, 1997, 3:55 p.m.: 20 IR 3016)*

327 IAC 8-4.1-4 Local planning teams

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 4. (a) The CPWSS shall coordinate and form or participate in a local planning team (LPT) to guide the development and implementation of the CPWSS's WHPP.

(b) The local planning team must have representation of parties that may be affected by the development and implementation of the WHPP.

(c) The CPWSS must public notice the formation of a local planning team in the newspaper of largest general circulation within the area where the LPT is being formed. *(Water Pollution Control Board; 327 IAC 8-4.1-4; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1724)*

327 IAC 8-4.1-5 Criteria for selecting the delineation method for determining the wellhead protection area

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18; IC 14-25-7

Sec. 5. (a) During Phase I of the WHPP, the CPWSS must delineate the WHPA using one (1) of the five (5) accepted methods of delineation.

(b) Any CPWSS may use the following methods:

(1) The analytical method.

(2) The numerical flow/solute transport model methods.

(3) The semianalytical method.

(c) A CPWSS may use the hydrogeologic mapping method as set out in the "Guidelines for Delineation of Wellhead Protection Areas"* as the sole method of delineation with prior approval from the department.

(d) A CPWSS may use the fixed radius method after receiving prior approval from the department. Approval to use the fixed radius method is based on either of the following criteria:

(1) A CPWSS does not qualify as a significant water withdrawal facility (in accordance with IC 14-25-7).

(2) A CPWSS qualifies as a significant water withdrawal facility, in accordance with IC 14-25-7, and the average daily withdrawal is less than one hundred thousand (100,000) gallons per day demonstrated by:

(A) submittal of annual total pumping data for the previous five (5) years of operation to the department; and

(B) statistical determination by the department of an upper confidence interval of one hundred thousand (100,000) gallons per day or less by the following formula:

$$\bar{x} = t_{(0.95, n-1)}(S/n^{1/2})$$

\bar{x} = Mean of pumping data

S = Standard deviation of pumping data
 $t_{(0.95, n-1)}$ = t statistic at 95%, n degrees of freedom
n = Number of observations

(e) Upon selecting and carrying out a delineation method, a CPWSS must submit justifying data in accordance with section 8 of this rule.

(f) All delineation methods available to CPWSSs for defining the WHPA are outlined within "Guidelines for Delineation of Wellhead Protection Areas".

(g) Site characterization and WHPA delineation, using either the modeling methods, described in subsection (b), or hydrogeological mapping methods described in subsection (c), must be performed by a qualified ground water scientist.

*"Guidelines for Delineation of Wellhead Protection Areas", United States Environmental Protection Agency, Office of Ground Water Protection, Washington, D.C. 20460, June 1987, EPA Publication No. 440/5-93-001. Copies of "Guidelines for Delineation of Wellhead Protection Areas" are available at the Indiana Department of Environmental Management, Office of Water Management, Drinking Water Branch, Ground Water Section, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana 46206-6015. (*Water Pollution Control Board; 327 IAC 8-4.1-5; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1724; errata filed Jun 25, 1997, 3:55 p.m.: 20 IR 3016*)

327 IAC 8-4.1-6 Map requirements

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 6. (a) All maps required by this rule, except topographic maps, must be drawn to a scale between 1" = 400' and 1" = 1,000'.

(b) All topographic maps required by this rule must be United States Geological Survey (USGS) seven and one-half (7.5) minute series. (*Water Pollution Control Board; 327 IAC 8-4.1-6; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1725*)

327 IAC 8-4.1-7 Delineation

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18; IC 14-25-7

Sec. 7. (a) If a CPWSS delineates the WHPA using a model, a report with a narrative description of the regional hydrogeologic setting, the conceptual model, and modeling efforts must be submitted. The report must include the following

(1) Analysis of hydrogeologic setting and the conceptual model including the following:

(A) Map of the area of interest.

(B) Review of published hydrogeologic and geologic interpretations over the area of interest.

(C) Geologic cross sections showing the following:

(i) Hydrostratigraphic units.

(ii) Water levels.

(iii) Relationship of surface water bodies to the hydrostratigraphic units.

(iv) Pumping wells with screened intervals.

(D) Well logs and records used in cross section development. If the number of well logs used in cross section development is greater than fifty (50), the maximum number of well logs submitted to represent the cross section(s) may be negotiated with the department.

(E) A map that illustrates over the area of interest the following:

(i) Location of CPWSS wells.

(ii) Location of high capacity wells registered as significant water withdrawal facilities as defined in IC 14-25-7.

(iii) Surface water features.

(iv) Thickness and extent of hydrostratigraphic units.

(v) Regional water levels.

(vi) Bedrock topography.

(F) Summary of raw data used in the development of the conceptual model.

(G) Discussion of hydrogeologic parameters.

(H) Discussion of the ground water flow system, including the following:

(i) Distribution of recharge.

(ii) Current CPWSS pumping rates and planned changes in pumping rates.

(iii) Pumping rates of neighboring high capacity wells.

(2) Presentation and discussion of the modeling effort must include the following:

(A) The rationale for delineation method selection.

(B) A tabulated summary of the model input parameters showing the range over which the parameters were varied.

(C) An example input file.

- (D) A map showing the following:
 - (i) The domain of the modeled area within the area of interest.
 - (ii) Location of any boundary conditions used.
 - (iii) Calibration target locations if used.
 - (iv) Modeled potentiometric surfaces.
 - (v) Resultant WHPA boundaries.
- (E) Discussion of the following:
 - (i) Assumptions used in the modeling effort.
 - (ii) Changes made to initial conditions.
 - (iii) Calibration analysis if used.
 - (iv) Water budget of the model if available.
 - (v) Effects of uncertainty in input parameters and boundary conditions on modeled WHPA boundaries.
- (b) A CPWSS that, after approval from the department, delineates the WHPA using the fixed radius method must submit the following data to the department:
 - (1) A map depicting the following:
 - (A) The wellhead protection area boundary.
 - (B) The CPWSS pumping well locations.
 - (C) The location of wells in the area registered as significant water withdrawal facilities as defined in IC 14-25-7.
 - (2) A topographic map of the area.
 - (3) Well logs for the CPWSS pumping well.
 - (c) A CPWSS that delineates the WHPA using the hydrogeologic mapping method must submit data as set out in the "Guidelines for Delineation of Wellhead Protection Areas"* and agreed to by the department and the CPWSS.

*"Guidelines for Delineation of Wellhead Protection Areas", United States Environmental Protection Agency, Office of Ground Water Protection, Washington, D.C. 20460, June 1987, EPA Publication No. 440/5-93-001. Copies of "Guidelines for Delineation of Wellhead Protection Areas" are available at the Indiana Department of Environmental Management, Office of Water Management, Drinking Water Branch, Ground Water Section, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana 46206-6015. (*Water Pollution Control Board*; 327 IAC 8-4.1-7; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1725; errata filed Jun 25, 1997, 3:55 p.m.: 20 IR 3016)

327 IAC 8-4.1-8 Phase I submittal requirements

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 9-21-2; IC 9-21-3; IC 13-11; IC 13-13; IC 13-18; IC 15-3-3.5; IC 15-3-3.6; IC 25-31; IC 25-39-4-6

Sec. 8. To have Phase I of a WHPP approved by the department, a CPWSS must submit the following material as prescribed in section 16 of this rule:

- (1) The names and affiliations of the members of the local planning team, as well as any subcommittees designated by the local planning team.
- (2) A complete WHPA delineation as described in section 7 of this rule. Items submitted in compliance with section 7(a)(1)(C), 7(a)(1)(E)(iv), 7(a)(1)(E)(vi), and 7(c) of this rule must be performed by or under the supervision of a certified professional geologist and bear his/her seal. Items submitted in compliance with section 7(a)(1)(C), 7(a)(1)(E)(iv), 7(a)(1)(E)(vi), and 7(c) of this rule are exempt from certification by a certified professional geologist when performed by:
 - (A) an officer or employee of the United States government, state government, or local government while engaged in providing geological services for the officer's or employee's employers;
 - (B) a person engaged solely in geological research or instruction of geology; or
 - (C) a professional engineer registered under IC 25-31 who applies geology to the practice of engineering.
- (3) An inventory of potential sources of contamination containing a complete list of existing facilities, sites, practices, and activities for both regulated and unregulated potential sources of contamination. The inventory of potential sources of contamination must be submitted in the following forms:
 - (A) A narrative description of land use within the WHPA.
 - (B) A land use map with potential sources of contamination plotted, showing their locations relative to the WHPA boundaries.
 - (C) A table containing information describing the potential sources of contamination, including the following:
 - (i) Facility identification number (cross-referenced to clause (B)).
 - (ii) Facility name and location.
 - (iii) Site description.
 - (iv) Any environmental permits issued for the site, including number and agency issuing the permit.
 - (v) Types of contaminants at site.
 - (vi) Operating status of site.

- (4) A management plan that must include the following:
 - (A) A plan to manage the sanitary setback area that includes the following:
 - (i) Measures for the management of the area, consistent with the requirements of 327 IAC 8-3.
 - (ii) Measures to prohibit the storage and mixing of chemicals, other than:
 - (AA) those used for drinking water treatment; or
 - (BB) pesticides that are regulated by the pesticide review board through IC 15-3-3.5 and IC 15-3-3.6.
 - (iii) Provisions to secure the wellhead to prevent unauthorized access.
 - (iv) Guidelines that employ best management practices for transportation routes within the sanitary setback area.
 - (B) A plan to manage the WHPA that addresses the following:
 - (i) Management or monitoring measures for all potential sources of contamination as identified in subdivision (3) to effectively protect the ground water and drinking water supply. The management or monitoring measures must consider the locations and type of potential sources of contamination and hydrogeologic characteristics of the WHPA.
 - (ii) Compliance of CPWSS production wells with state construction standards and permit requirements under 327 IAC 8-3 and 310 IAC 16.
 - (iii) Monitoring for contaminants associated with identified potential sources of contamination according to the department's standardized monitoring framework under 327 IAC 8-2.
 - (iv) Methods or procedures for maintaining and updating records concerning changes to potential sources of contamination within the WHPA.
 - (v) Identification of abandoned wells not in compliance with IC 25-39-4-6 and 310 IAC 16-10.
 - (vi) Use, application, storage, mixing, loading, transportation, and disposal of pesticides in accordance with IC 15-3-3.5, IC 15-3-3.6, and the rules and guidance thereunder, developed by the pesticide review board and the state chemist.
 - (vii) Notification of property owners, mineral owners and leaseholders of record that they are located within a WHPA.
 - (viii) Provide owners and operators of identified potential sources of contamination access to a copy of the local WHPP.
 - (ix) The establishment of a public outreach program to educate the public and owners or operators of identified potential sources of contamination about the consequences of ground water contamination, and the methods available for preventing ground water contamination.
 - (x) The posting of wellhead protection signs along major thoroughfares at the perimeter of the WHPA.
 - (xi) Other management measures required to comply with this section.
- (5) A contingency plan to provide safe drinking water in emergency conditions must include the following:
 - (A) Description of plan to train local responders.
 - (B) Description of emergency response to leaks, spills, or illegal discharges.
 - (C) A list of information to be provided to local responders, including the following:
 - (i) Location of WHPA boundaries.
 - (ii) CPWSS operators to contact during an emergency.
 - (iii) A twenty-four (24) hour telephone number for the following:
 - (AA) IDEM, office of emergency response.
 - (BB) State, local, and city/county police.
 - (CC) State, local, and city/county fire/hazmat team.
 - (DD) City or county disaster services agency.
 - (EE) Water supply owner, superintendent, and operator.
 - (FF) City or county hospital.
 - (D) Identification and description of potential alternate sources of water.
 - (E) Identification of procedures and description of methods to notify critical water users of an emergency.
 - (F) The posting of procedures to follow in an emergency and information on the location and availability of the complete contingency plan.

(Water Pollution Control Board; 327 IAC 8-4.1-8; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1726; errata filed Jun 25, 1997, 3:55 p.m.: 20 IR 3016)

327 IAC 8-4.1-9 Phase II submittal requirements

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 9. To have Phase II of a WHPP approved by the department, a CPWSS must submit the following material within the time frame prescribed in section 16 of this rule:

- (1) Phase II delineation must include the following:
 - (A) An updated Phase I submittal reflecting changes, if any.

- (B) A discussion describing how the updated WHPA compares with the previously delineated WHPA.
 - (2) Phase II potential sources of contamination inventory must include an update to the source inventory provided in the Phase I submittal.
 - (3) Phase II management plan must include the results of the implementation of Phase I management plan.
 - (4) Phase II contingency plan must include documentation of training given to local responders.
- (Water Pollution Control Board; 327 IAC 8-4.1-9; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1727)

327 IAC 8-4.1-10 Department review of Phase I and Phase II submittal requirements

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 10. (a) The department shall review Phase I and Phase II submittals based on the following criteria:

- (1) WHPA delineation, including the following:
 - (A) The completeness and accuracy of the data used to determine the hydrogeologic conceptualization as required in section 7 of this rule.
 - (B) The information provided in the submittal demonstrates that the chosen delineation method properly accounts for site specific hydrogeology.
- (2) Potential sources of contamination inventory, including the following:
 - (A) The completeness of the specific data supplied regarding each facility, site, practice, and activity, including the following:
 - (i) The inventory, identification, and location of all potential sources of contamination according to the data requirements of section 8(3) of this rule.
 - (ii) Identification of all potential sources of contamination in the WHPA on a map that includes the boundaries of the time of travel.
 - (iii) Characterization of the potential sources of contamination as specified in section 8(3)(C) of this rule is sufficient to develop a management plan as prescribed by section 8(4)(A) and 8(4)(B) of this rule.
 - (B) The department shall evaluate Phase II based on the completeness of the update to adequately characterize the status of all potential sources of contamination identified and inventoried under Phase I, and any new potential sources of contamination that have located within the WHPA.
 - (C) The department shall evaluate the updates made to the potential sources of contamination inventory every five (5) years, as required by section 9(2) of this rule, for completeness with respect to the status of all potential sources of contamination identified in the Phase I and Phase II submittals.
- (3) Management plan including the following:
 - (A) The Phase I management plan will be considered effective when all management plans and submittal requirements of section 8(4)(A) and 8(4)(B) of this rule and subdivision (1) have been met. The management plan must consider the following:
 - (i) Site-specific hydrogeology.
 - (ii) Land use.
 - (iii) Conditions of potential sources of contamination.
 - (B) The department will approve Phase II, results of implementation of Phase I, upon finding that the management plan has been implemented as proposed under section 8(4)(B) of this rule.
- (b) Under Phase I, the department may require the use of a different delineation method. Under both Phase I and Phase II, the department may require submittal of additional data to support information provided as part of the WHPP.
- (c) For a CPWSS using the fixed radius method to delineate a WHPA, the department may require the use of a different delineation method if the CPWSS fails to maintain the qualification for use of the fixed radius method as outlined in section 5(d) of this rule. (Water Pollution Control Board; 327 IAC 8-4.1-10; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1727)

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&SDNO.327 IAC 8-4.1-11 Tracking of potential sources of contamination inventory and management plan

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 11. (a) The department shall track Phase I accomplishments by mailing two (2) surveys to each CPWSS as follows:

- (1) The first survey shall be mailed two (2) years, and the second shall be mailed one (1) year, prior to the deadline for Phase I submittal for a large CPWSS.
- (2) The first survey shall be mailed two and one-half (2½) years, and the second survey shall be mailed one (1) year, prior to the deadline for Phase I submittal, for a medium CPWSS.

(3) The first survey shall be mailed three (3) years, and the second survey shall be mailed one (1) year, prior to the deadline for Phase I submittal, for a small CPWSS.

(b) The department shall track Phase II progress by sending an additional survey, that includes an update of the potential sources of contamination inventory, to each CPWSS two (2) years before the Phase II requirements must be submitted to the department as follows:

(1) The survey shall be mailed three (3) years after the department's approval of the Phase I submittal for a large CPWSS.

(2) The survey shall be mailed five (5) years after the department's approval of the Phase I submittal for a medium CPWSS.

(3) The survey shall be mailed eight (8) years after the department's approval of the Phase I submittal for a small CPWSS.

(c) Continued tracking of management plans will begin five (5) years after the department's approval of the Phase II submittal and will continue in five (5) year cycles as long as the CPWSS is in operation.

(d) Any CPWSS that has not applied for approval of the WHPP within the designated period set forth in section 16 of this rule will be considered in noncompliance.

(e) All surveys must be completed and submitted to the department within forty-five (45) days of receipt. *&HST.(Water Pollution Control Board; 327 IAC 8-4.1-11; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1728)&EHST.*

327 IAC 8-4.1-12 Submittal requirements for proposed new wells

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 12. (a) For a proposed well site in a department approved Phase I or Phase II WHPP, with the proposed well included in the WHPA delineation, the CPWSS shall apply for a construction permit, as provided for in 327 IAC 8-3, and shall describe the proposed well site in relation to the approved WHPA.

(b) For a proposed well site in a department approved Phase I or Phase II WHPP, with the proposed well not included in the WHPA delineation, the CPWSS shall apply for a construction permit as provided for in 327 IAC 8-3, and shall submit new well site submittal requirements as described in section 13 of this rule.

(c) For a proposed well site in a wellfield not in a department approved Phase I or Phase II WHPP, the CPWSS must apply for a construction permit as provided for in 327 IAC 8-3, and shall submit new well site submittal requirements as described in section 13 of this rule. *(Water Pollution Control Board; 327 IAC 8-4.1-12; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1728)*

327 IAC 8-4.1-13 New well site submittal requirements

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 13. (a) All CPWSSs subject to this rule must receive approval for a new well site and shall submit the following:

(1) A United States Geological Survey seven and one-half (7.5) minute series topographic map illustrating the area surrounding the well and proposed well site.

(2) A detailed map, drawn to a scale between 1" = 400' and 1" = 1,000', showing the following:

(A) Proposed well site with ownership or easement boundaries.

(B) The location of the proposed well.

(C) The sanitary setback area.

(3) A WHPA delineated using the following:

(A) Fixed radius method, with a radius of three thousand (3,000) feet, regardless of the pumping capacity of the system.

(B) An analytical, semianalytical, or numerical model, executed by a qualified ground water scientist, using input parameters calculated from:

(i) regional data from published reports; or

(ii) site-specific data.

(C) Any approved method described in section 5 of this rule.

(4) A potential sources of contamination inventory performed by methods outlined in section 8(3) of this rule.

(5) A summary of geologic and ground water quality information for the aquifer system utilized by a proposed well, where available.

(6) A schedule for the development of a Phase I WHPP.

(b) Approval of a CPWSS proposed well site is dependent on the ability of each CPWSS to provide safe drinking water, as determined by the department under 327 IAC 8-2.

(c) To maintain well site approval status, the CPWSS must meet the following requirements:

(1) Allow no new potential sources of contamination to locate within the sanitary setback area.

(2) The CPWSS is operated in such a manner that it will not violate any sanitary or health regulations or requirements.

(3) Maintenance of additional requirements specified by the CPWSS construction permit.

(Water Pollution Control Board; 327 IAC 8-4.1-13; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1729)

327 IAC 8-4.1-14 Well site denial criteria

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 14. The department may deny a well site if:

- (1) a source of chemical or pathogenic contamination is found within the sanitary setback area that is so severe that it cannot be consistently treated or managed to a level considered safe by standards under 327 IAC 8-2; or
- (2) a chemical or pathogenic contaminant reported in the ground water quality information submitted under section 13(b)(6) of this rule is so severe that it cannot be consistently treated or managed to a level considered safe by standards under 327 IAC 8-2.

(*Water Pollution Control Board; 327 IAC 8-4.1-14; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1729*)

327 IAC 8-4.1-15 Alternative approaches to WHPP

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 15. (a) The department may approve alternate approaches to section 8(4)(A) of this rule upon a showing that water from a well or wellfield providing ground water to a CPWSS exceeds the standard for conventional ground water treatment as set forth in 327 IAC 8-2.

(b) In reviewing the alternative management plan under this section, the department shall consider whether the proposed alternative management plan will result in the consistent provision of finished water in compliance with 327 IAC 8-2. (*Water Pollution Control Board; 327 IAC 8-4.1-15; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1729*)

327 IAC 8-4.1-16 Community public water supply systems submittal deadlines; department approval deadlines

Authority: IC 13-14-8; IC 13-18-3; IC 13-18-17-6

Affected: IC 13-11; IC 13-13; IC 13-18

Sec. 16. (a) Each CPWSS must submit all materials required by this rule as follows: (See Table 1 in subsection (c).)

(1) Phase I submittals are as follows:

- (A) All materials must be submitted within three (3) years for large CPWSS.
- (B) All materials must be submitted within four (4) years for medium CPWSS.
- (C) All materials must be submitted within five (5) years for small CPWSS.

(2) Phase II submittals are as follows:

- (A) All materials must be submitted within five (5) years after department approval of Phase I material for large CPWSS.
- (B) All materials must be submitted within seven (7) years after department approval of Phase I material for medium CPWSS.
- (C) All materials must be submitted within ten (10) years after department approval of Phase I material for small CPWSS.

(b) The department will approve or disapprove the materials submitted within one hundred eighty (180) days after submission.

(c) The wellhead protection overview shall be as follows:

Table 1 - Wellhead Protection Overview

Public Water Supply System Size (population served)	PHASE I		PHASE II	
	Submittal Time (years)	Submittal Requirements	Submittal Time from Phase I Approval (years)	Submittal and Update Requirements
Large >50,001	3	<ol style="list-style-type: none"> 1. Names, roles, and affiliation of the local planning team members. 2. WHPA delineation, including: <ol style="list-style-type: none"> A. Summary of geologic and hydrologic condition of the WHPA. B. Model input data. C. Justification of model choice. 3. Potential sources of contamination inventory. 4. Management strategy with schedule for implementation. 5. Contingency plan. 6. Description of public participation. 7. Description of public education program. 	5	<ol style="list-style-type: none"> 1. Comprehensive WHPP. 2. Updated schedule of implementation. 3. Updated WHPA, considering new data if any. 4. Updated potential sources of contamination inventory. 5. Report of any problems or concerns regarding WHPP. 6. Contingency plan revisions (if needed). 7. Documentation to confirm: <ol style="list-style-type: none"> A. Sanitary Setback Area meets requirements. B. Abandoned wells are identified. C. Wellhead is secured from unauthorized access. D. All potential sources of contamination within the WHPA are managed. E. Signs are posted at WHPA perimeter. F. Public education is ongoing. G. Any new ground water contamination within the WHPA is reported.
Medium 3,301 to 50,000	4		7	

Small ≤3,300	5	10
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(*Water Pollution Control Board; 327 IAC 8-4.1-16; filed Feb 28, 1997, 4:18 p.m.: 20 IR 1729*)

Rule 5. Construction of Public Water Supply Systems Under Order of the DEM

327 IAC 8-5-1 Construction of public water supply system; hearing

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 1. (a) Whenever investigation by the commissioner shall show that the lack of proper or adequate public water supply system, in an incorporated city or town, results in insanitary conditions, or conditions causative of disease, and that the construction of a public water supply system, will abate, and is a practical method to abate such conditions, said incorporated city or town shall, upon receipt of an official order from the commissioner, immediately proceed to construct, cause to be constructed, or allow to be constructed, a public water supply system, including a source of supply, distribution lines and other necessary appurtenances, sufficient to abate the insanitary conditions causative of disease and to protect the public health.

(b) Provided, that such official order shall not be issued by the commissioner until after an opportunity for a hearing has been given to the proper officials of such incorporated city or town, at which hearing the facts as shown by the investigation made by the commissioner shall be presented to said officials. (*Water Pollution Control Board; 327 IAC 8-5-1; filed Sep 24, 1987, 3:00 pm: 11 IR 711*)

Rule 6. Improvements of Public Water Supply Systems or Treatment Works Under Order of the DEM

327 IAC 8-6-1 Improvements required in public water supply system or treatment works

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14

Sec. 1. (a) Whenever investigation by the commissioner shall show any public water supply system, or water treatment works, or any part thereof to be inadequate, or to be improperly located, constructed or operated, and by reason thereof to be causative of disease, or that the water obtained therefrom fails to meet the drinking water standards of 327 IAC 8-2, the person, firm, corporation or municipality owning and/or operating said public water supply system or water treatment works, upon receipt of an official order from the commission, shall proceed within such time as is therein provided to carry out such changes, extensions or improvements, or to institute such changes in the methods of operation of said public water supply system or water treatment works as may be necessary to abate such conditions.

(b) Any order of the commissioner shall be a written order and shall establish a time within which the steps contemplated in said order shall be carried out.

(c) Provided, that such official order shall not be issued by the commissioner until an opportunity for a hearing has been given to the person, firm, corporation or municipality owning and/or operating said public water supply system or water treatment works, at which hearing the facts as shown by the investigation made by said commissioner shall be presented to said person, firm, corporation or municipality. Notice of such hearing shall be given not less than ten (10) days prior to the date set for said hearing. (*Water Pollution Control Board; 327 IAC 8-6-1; filed Sep 24, 1987, 3:00 pm: 11 IR 712*)

Rule 7. Water Supply and Distribution Systems; School Buildings and Related Facilities

327 IAC 8-7-1 School water supply and distribution systems

Authority: IC 13-7-7-5; IC 13-7-14-5; IC 16-1-24-1

Affected: IC 13-7-7-5; IC 13-7-14-5; IC 16-1-24-1

Sec. 1. (a) All school buildings and related facilities shall be supplied with safe, potable water from an approved source and an approved distribution system.

(b) The water for school buildings and related facilities shall be supplied under pressure. The water supply and distribution system shall be sized and constructed to deliver water at twenty (20) pounds per square inch minimum pressure to all fixtures and appurtenances during periods of peak water demand. Exception: Where religious custom precludes the use of electrically or gasoline driven well pumps, school buildings may be served by hand-operated well pumps, providing the well and well pump are located and constructed in compliance with this rule (327 IAC 8-7) and applicable sections of 410 IAC 6-5.1.

(c) Where a public water supply is available or becomes available within a reasonable distance from the school facility, a connection

shall be made thereto and its water used exclusively. Exception: With prior written approval from the commissioner, alternate sources of water may be utilized for lawn sprinkling, bus washing, fire fighting, and other nonpotable uses provided that a nonpotable distribution system, totally separate from the potable system, is also utilized.

(d) Where a public water supply is not available, a properly located and constructed private water supply shall be provided.

(e) The minimum distances between wells and buried pump suction lines and from sources of contamination shall be in accordance with the following:

Sewers and drains 100 feet

Exception: Sewers and drains of cast or ductile iron water works grade pipe having mechanical joints may be located closer than one hundred (100) feet, but shall be located no closer than thirty (30) feet from wells and buried pump suction lines.

Septic tanks, absorption fields, wastewater treatment facilities, privies..... 100 feet

Streams, lakes, ponds, ditches 25 feet

Property lines 100 feet

Exception: The separation distances enumerated herein shall not be considered adequate in areas where fissured stone or very permeable soils are encountered.

(f) Wells shall be tested for stabilized yield and drawdown by high-capacity pumping (initially at one hundred fifty percent (150%) or more of the design pumping rate) for at least twenty-four (24) hours, and the results submitted to the commissioner for review along with the final plans for any school facility improvement.

(g) Water supplies shall have no well head, well casing, pump, pumping machinery, or exposed pressure tanks or suction piping located in any pit, room, or space which is walled in or otherwise enclosed so that it does not have free drainage by gravity to the surface of the ground at all times.

(h) All water supply wells shall be cased, and the annular space properly sealed, to a depth of at least twenty-five (25) feet below finished grade. The casing pipe of any well shall project not less than twenty-four (24) inches above floor level, finished grade or the highest flood level of record, whichever is greater. No casing shall be cut off below finished grade except to install a pitless adapter.

(i) Well pumps, pressure tanks, storage tanks, etc., shall be sized to meet peak water demands and total daily demands. The minimum usable capacity of the pressure tank, in gallons, shall be three (3) times the installed well pump capacity, in gallons per minute (for example, a pump of 30 gpm capacity would require a pressure tank of ninety (90) gallons usable capacity). If the well or pump cannot meet peak demands, sufficient additional usable storage capacity shall be provided to meet peak demands.

(j) Each school building or addition to a school building may have a potable water supply where necessary to provide adequate service. However, where two (2) or more potable water supply systems are located on the same site, the water supply systems shall be sufficiently interconnected to allow for the maximum possible utilization of each, should a system fail.

(k) After February 17, 1985, no potable water distribution line may be constructed which crosses a sewer with less than eighteen (18) inches vertical clearance, or which runs parallel to a sewer with less than ten (10) feet horizontal separation, unless the sewer is constructed of water works grade cast or ductile iron pipe with mechanical joints within ten (10) feet of the potable water distribution line. Lesser horizontal separation distances may be allowed on a case-by-case basis if eighteen (18) inches vertical clearance can be maintained.

(l) There shall be no direct physical connection, existing or potential, between a potable water supply system and an unsafe water supply system used for fire protection, lawn sprinkling, toilet flushing or other nonpotable uses.

(m) Wells and potable water distribution systems shall be disinfected after construction and after each repair. Before releasing the potable system for use, the water shall be tested and shown to be bacteriologically acceptable in at least two (2) consecutive samples collected twenty-four (24) hours apart.

(n) No new equipment, chemical additive, or treatment method shall be employed to treat the water in the potable water supply system of a school without having obtained prior written approval from the commissioner.

(o) The concentration of fluoride in a school water supply which has a fluoride adjustment program shall not exceed 5.5 milligrams per liter.

(p) Unless lower water system demands can be documented to the satisfaction of the commissioner, all school buildings and additions to school buildings constructed after February 17, 1985, shall have a water supply system capable of furnishing a minimum of fifteen (15) gallons per day per elementary student and below, twenty-five (25) gallons per day per secondary student and above, and one hundred (100) gallons per day per dormitory bed, based on maximum building occupancy. (*Water Pollution Control Board; 327 IAC 8-7-1; filed Sep 24, 1987, 3:00 pm: 11 IR 712*)

Rule 8. Water Supply and Distribution Systems; Mobile Home Parks

327 IAC 8-8-1 Mobile home park water supply and distribution systems

Authority: IC 13-1-7-3; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-7-3; IC 13-7-7-5; IC 13-7-14-5

Sec. 1. (a) In all parks and additions to parks an accessible, adequate, safe and potable supply of water shall be provided in each mobile home park.

(b) Where a public water supply is available, a connection shall be made thereto and its water used exclusively.

(c) Water supply wells shall be located in all area not subject to flooding.

(d) The minimum distances between wells and buried pump suction lines and from sources of contamination shall be in accordance with the following:

Sewers, drains and appurtenances.....	100 feet
*Sewers and drains of water works grade pipe having mechanical or push-type joints	30 feet
Sewage treatment and disposal devices	100 feet
Streams, lakes, ponds, ditches.....	50 feet
Property lines.....	25 feet

*The location or construction of sewers or drains less than one hundred (100) feet from a well or suction line is discouraged.

(e) The water supply and distribution system shall be sized and constructed to deliver water at twenty (20) pounds per square inch minimum pressure to all mobile homes during periods of peak water demands.

(f) Water supplies shall have no well head, well casing, pump, pumping machinery, valve connected with the suction pump, or exposed suction pipe located in any pit, room or space extending below ground level; or in any room or space above the ground which is walled in or otherwise enclosed so that it does not have free drainage to the surface of the ground.

(g) Water supplies shall have all that part of the suction pipe, drop pipe, or delivery pipe not normally under constant pressure and located within twenty-five (25) feet of the ground surface surrounded by a water-tight casing pipe extending at least twelve (12) inches above the ground.

(h) Each mobile home lot, except those used specifically for dependent mobile homes, shall be provided with a cold water tap extending at least four (4) inches above the ground surface. The outlet shall be protected from freezing by the use of a heater tape, insulation, or draining when not in use. In no case shall stop-and-waste valve or other device which would allow aspiration or backflow or contaminated water into the potable water system be used.

(i) Water distribution lines and sewers shall not be placed in the same trench after June 14, 1974, but shall be separated not less than ten (10) feet horizontally. The individual water and sewer connections on each lot shall be separated not less than five (5) feet horizontally.

(j) Wells and water distribution systems shall be disinfected after construction or repair and the bacteriological quality of the water shall be in conformance with these rules (327 IAC 8).

(k) Construction and location requirements of the wells, pumps and distribution system shall be in accordance with the applicable standards of the board.

(l) The water supply system shall be capable of furnishing a minimum of two hundred (200) gallons per day per mobile home lot in all mobile home parks constructed after June 14, 1974, as well as in all additions to mobile home parks constructed after the date. (*Water Pollution Control Board; 327 IAC 8-8-1; filed Sep 24, 1987, 3:00 pm: 11 IR 713*)

Rule 9. Water Supply and Distribution Systems; Agricultural Camps

327 IAC 8-9-1 Agricultural labor

Authority: IC 13-1-9-6; IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-9-1; IC 13-1-9-6; IC 13-7-7-5; IC 13-7-14-5

Sec. 1. (a) An adequate and convenient supply of water which meets the quality standards of the board shall be available at all times in each agricultural labor camp for culinary, drinking, bathing and laundry puposes [*sic.*]. Where a public water supply is available, it shall be used to provide water for the agricultural labor camp.

(b) When wells are used as the course of the agricultural labor camp water supply, they shall be in full compliance with the provisions of the Indiana state board of health Bulletin SE 13, "Plumbing Guide For Private Water Supply and Sewage Disposal for Small Public, Commercial and Place of Employment Buildings Minimum Requirements" or as otherwise approved by the commissioner.

(c) A cold water tap shall be available within one hundred (100) feet of each individual living unit when water is not provided in the unit. Adequate drainage facilities shall be provided for overflow and spillage.

(d) Common drinking cups shall not be permitted.

(e) "Agricultural labor camp" is defined in IC 13-1-9-1(a). (*Water Pollution Control Board; 327 IAC 8-9-1; filed Sep 24, 1987, 3:00 pm: 11 IR 714*)

Rule 10. Cross Connections; Control; Operation

327 IAC 8-10-1 Definitions

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-1-3-1.5; IC 13-7-1; IC 13-7-7-5; IC 13-7-14-5

Sec. 1. In addition to the definitions contained in IC 13-7-1, IC 13-1-3-1.5, and in 327 IAC 1, the following definitions apply:

"Air gap" means an unobstructed vertical distance through atmosphere between the discharge end of a pipeline supplied from a public water supply, and the overflow rim of the receiving portion of the customer water system.

"Backflow" means the flow or contaminants into the public water supply distribution system from a source other than the public water supply.

"Booster pump" means a pump installed on a pipeline to increase water pressure and flow.

"Cross connection" means any physical arrangement, including cross connection control devices not in working order, whereby a public water supply distribution system is directly connected, either continuously or intermittently, with any secondary source of supply, sewer, drain, conduit, pool, piping, storage reservoir, plumbing fixture, or other device which contains, or may contain, and is capable of imparting to the public water supply, contaminants, contaminated water, sewage, or other waste or liquid of unknown or unsafe quality.

"Cross connection control device" means any device or assembly, approved by the board for construction on or installation in water supply piping, which is capable of preventing contaminants from entering the public water supply distribution system.

"Cross connection control device inspector" means a person who has successfully completed training in testing and inspection of cross connection control devices at an agency or school acceptable to the commissioner, who has registered with the commissioner, and who has not been notified by the commissioner that his work is unacceptable under this rule (327 IAC 8-10).

"Cross connection hazard" means any customer facility which, because of the nature and extent of activities on the premises or the materials used in connection with the activities or stored on the premises, would present an immediate or potential danger or health hazard to customers of the public water supply should backflow occur.

"Customer" means any person who receives water from a public water supply.

"Customer service line" means the pipeline from the public water supply to the first tap, fixture, receptacle, or other point of customer water use; or to the first secondary source of supply, or pipeline branch in a building.

"Customer water system" means all piping, fixtures, and appurtenances, including secondary sources of supply, used by a customer to convey water on his premises.

"Double check valve assembly" means a device or assembly composed of two (2) tightly closing shut-off valves surrounding two (2) independently acting check valves, with four (4) test cocks, one (1) upstream of the four (4) valves and one (1) between each of the four (4) check and shut-off valves.

"Downstream" means the direction of flow when only the public water supply is supplying water through the customer water system and backflow is not occurring.

"Pressure type vacuum breaker" means a chamber fitted with a spring-loaded air inlet, for relieving a vacuum or partial vacuum in a pipeline.

"Public water supply" means any wells, reservoirs, lakes, rivers, source of supply, pumps, mains, pipes, facilities, and structures through which water is obtained, treated as may be required, and supplied through a water distribution system to at least one hundred (100) persons per day for drinking, domestic, or other purposes, including state-owned facilities.

"Reduced pressure principle backflow preventer" means a device composed of two (2) tightly closing shut-off valves surrounding two (2) independently acting pressure reducing check valves which in turn surround an automatic pressure differential relief valve, and four (4) test cocks, one (1) upstream of the five (5) valves and one (1) between each of the four (4) check and shut-off valves. The check valves effectively divide the structure into three (3) chambers; pressure is reduced in each downstream chamber allowing the pressure differential relief valve to vent the center chamber to atmosphere should either or both check valves malfunction.

"Secondary source of supply" means any well, spring, cistern, lake, stream, or other water source, intake structure, pumps, piping, treatment units, tanks and appurtenances used, either continuously or intermittently, to supply water other than that from the public water supply to the customer, including tanks used to store water to be used only for fire fighting, even though the water contained therein is supplied from the public water supply.

"Supplier of water" means any person who owns and/or operates a public water supply.

"Upstream" means the direction of flow opposite to downstream. (*Water Pollution Control Board; 327 IAC 8-10-1; filed Sep 24, 1987, 3:00 pm: 11 IR 714*)

327 IAC 8-10-2 Cross connection prohibited; bypass

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 2. No customer shall cause or allow the construction or maintenance of a cross connection. Piping installed to bypass a cross connection control device constitutes a cross connection unless the bypass piping is also fitted with a similar cross connection control device. (*Water Pollution Control Board; 327 IAC 8-10-2; filed Sep 24, 1987, 3:00 pm: 11 IR 715*)

327 IAC 8-10-3 Booster pump connection

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 3. No customer shall cause or allow the installation or maintenance of a booster pump in a customer water system unless a control device is installed to prevent operation of the booster pump when pressure to pump suction drops below twenty (20) pounds per square inch, gauge. (*Water Pollution Control Board; 327 IAC 8-10-3; filed Sep 24, 1987, 3:00 pm: 11 IR 715*)

327 IAC 8-10-4 Cross connection hazards; notice; exemptions

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 4. (a) Customers constructing a new facility which is designated a cross connection hazard by subsection (c), or making modifications to the customer service line or installing a higher capacity meter at an existing facility which is designated a cross connection hazard by subsection (c), shall construct an air gap or install a reduced pressure principle backflow preventer, in accordance with 327 IAC 8-10-7(a) or 327 IAC 8-10-7(b)(1), on the customer service line to the facility so designated.

(b) Customers having an existing facility which is designated a cross connection hazard by subsection (c), and which have a cross connection which results in a contaminant being introduced into the public water supply or to the customer water system after July 19, 1985, shall immediately construct an air gap or install a reduced pressure principle backflow preventer in accordance with 327 IAC 8-10-7(a) or 327 IAC 8-10-7(b)(1), on the customer service line to the facility so designated.

(c) The following customer facilities are designated cross connection hazards:

- (1) Aircraft and missile manufacturing plants.
- (2) Automotive plants including those plants which manufacture motorcycles, automobiles [*sic.*], trucks, recreational vehicles, construction and agricultural equipment.
- (3) Beverage bottling plants, including dairies and breweries.
- (4) Canneries, packing houses, and reduction plants.
- (5) Car washes.
- (6) Chemical, biological, and radiological laboratories including those in high schools, trade schools, colleges, universities, and research institutions.
- (7) Hospitals, clinics, medical buildings, autopsy facilities, morgues, other medical facilities, and mortuaries.
- (8) Metal and plastic manufacturing, fabrication, cleaning, plating, and processing facilities.
- (9) Plants manufacturing paper and paper products.
- (10) Plants manufacturing, refining, compounding or processing fertilizer, film, herbicides, natural or synthetic rubber, pesticides, petroleum or petroleum products, pharmaceuticals, radiological materials, or any chemical which could be a contaminant to the public water supply.
- (11) Commercial facilities that use herbicides, pesticides, fertilizers or any chemical which could be a contaminant to the public water supply.
- (12) Plants processing, blending or refining animal, vegetable or mineral oils.
- (13) Commercial laundries and dye works, excluding coin-operated laundromats.
- (14) Sewage, storm water, and industrial waste treatment plans and pumping stations.
- (15) Water front facilities including piers, docks, marinas, and shipyards.
- (16) Industrial facilities which recycle water.
- (17) Restricted or classified facilities (federal government defense or military installations), or other facilities closed to the supplier of water or to the commissioner.

(d) Customer facilities not designated as a cross connection hazard by subsection (c) may be designated a cross connection hazard by written notification from the commissioner to the customer and to his supplier. The notice shall specify the nature of the customer activity which necessitates designation of his facility as a cross connection hazard, and the date by which the customer shall install a cross connection control device as specified in accordance with 327 IAC 8-10-7(a) or 327 IAC 8-10-7(b)(1), on the customer service line to the facility so designated.

(e) The commissioner may issue a letter exempting a customer from the requirements of subsection (a) if the customer can show to the satisfaction of the commissioner that the activities taking place at his facility, and the materials used in connection with these activities or stored on the premises, cannot endanger the health of customers of the public water supply should backflow occur. An exemption shall remain valid for no more than three (3) years following the date of issuance. If the commissioner finds that the customer facility has become a cross connection hazard, the commissioner will void the exemption and so notify the customer. (*Water Pollution Control Board; 327 IAC 8-10-4; filed Sep 24, 1987, 3:00 pm: 11 IR 716*)

327 IAC 8-10-5 Secondary source of installation of supply; installation of air gaps or other devices

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 5. (a) Customers shall construct an air gap or install a reduced pressure principle backflow preventer or a double check valve assembly in accordance with 327 IAC 8-10-7(a) or 327 IAC 8-10-7(b)(1) or (2), on the customer service line to:

(1) tanks used only to store water from the public water supply for fire fighting which are constructed to maintain the bacteriological quality of the water, in compliance with 327 IAC 8-2; or

(2) secondary sources of supply which use well water as the only private source of supply and which are constructed to maintain the bacteriological quality of the water, in compliance with 327 IAC 8-2, and which produce, without treatment, water meeting the drinking water quality standards enumerated in 327 IAC 8-2.

(b) No secondary source of supply of a type other than those enumerated in 327 IAC 8-10-5(a), shall be physically connected on the customer service line to or into the facility. (*Water Pollution Control Board; 327 IAC 8-10-5; filed Sep 24, 1987, 3:00 pm: 11 IR 716*)

327 IAC 8-10-6 Land irrigation facility buried below ground; installation of air gaps or other devices

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 6. Customers shall construct an air gap or install a reduced pressure principle backflow preventer or pressure type vacuum breaker in accordance with 327 IAC 8-10-7(a), 327 IAC 8-10-7(b)(1) or (3) on the water line connecting the public water supply to any land irrigation facility buried below ground which has a sprinkling outlet located less than six (6) inches above grade, and which is constructed after July 19, 1985. (*Water Pollution Control Board; 327 IAC 8-10-6; filed Sep 24, 1987, 3:00 pm: 11 IR 717*)

327 IAC 8-10-7 Construction and installation requirements for air gaps or other devices

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 7. (a)(1) The discharge pipe of an air gap shall terminate a minimum of two pipe diameters of the discharge pipe or six inches, whichever is the lesser, above the maximum recorded flood level or above the flood level rim of the receiving vessel, whichever is higher.

(2) Only those models of double check valve assemblies, reduced pressure principle backflow preventers, and pressure type vacuum breakers which have been listed by the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California (March 9, 1987), or are acceptable under the rules of the Indiana plumbing commission (860 IAC), or are an equivalent shall be installed.

(b)(1) Reduced pressure principle backflow preventers shall be installed horizontally, with no plug or additional piping affixed to the pressure differential relief valve port, and with the pressure differential relief valve port a minimum of twelve (12) inches above floor level. Additionally, the device must be installed at a location where any leakage from the pressure differential relief valve port will be noticed, and that allows access to the device for maintenance and testing from floor level, and that will not subject the device to flooding, excessive heat or freezing.

(2) All double check valve assemblies shall be installed horizontally at a location that allows access to the device for maintenance and testing from floor level and that will not subject the device to excessive heat or freezing.

(3) Pressure type vacuum breakers shall be installed as near as possible to the irrigation facility, at a location that allows access to the device for maintenance and testing from floor or ground level and that will not subject the device to flooding, excessive heat or freezing. Additionally, the device must be installed with its center line or datum point a minimum of twelve (12) inches above:

(A) floor level;

(B) the highest downstream shut-off valve; and

(C) the highest downstream overflow rim or discharge point.

(*Water Pollution Control Board; 327 IAC 8-10-7; filed Sep 24, 1987, 3:00 pm: 11 IR 717*)

327 IAC 8-10-8 Inspection of devices; time limits

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 8. (a) The customer shall install and maintain in working order at all times any cross connection control device or booster pump control device required by this rule (327 IAC 8-10).

(b) To ensure that each cross connection control device required by this rule (327 IAC 8-10) is in working order, the customer shall have each device inspected or tested by a cross connection control device inspector at the time of construction or installation, and at the following intervals, in the following manner:

(1) Air gaps shall be inspected at intervals not exceeding one year to ensure that they continue to meet the requirements of 327 IAC 8-10-7(a)(1).

(2) Reduced pressure principle backflow preventers shall be tested at intervals not exceeding six (6) months to ensure that both check valves are drip-tight under all pressure differentials, and that the pressure differential relief valve will maintain pressure in the center chamber at least two (2) pounds per square inch below that of the inlet chamber.

(3) Double check valve assemblies shall be tested at intervals not exceeding one (1) year to ensure that both check valves are drip-tight under all pressure differentials.

(4) Pressure type vacuum breakers shall be tested at intervals not exceeding six (6) months to ensure that the air inlet opens fully when water pressure is at or below atmospheric.

(c) The customer shall permit access to his premises by the inspector, supplier of water and representatives of the commissioner, at reasonable times, and upon presentation of identification, for inspection of the customer water system or testing of cross connection control devices installed in accordance with this rule (327 IAC 8-10).

(d) Those customers granted an exemption in accordance with 327 IAC 8-10-4(e) shall report to the commissioner and to the supplier of water any proposed change in process, plumbing or in materials used or stored at the exempted facility at least fourteen (14) days prior to making the change. Failure to do so shall void the exemption. (*Water Pollution Control Board; 327 IAC 8-10-8; filed Sep 24, 1987, 3:00 pm: 11 IR 717*)

327 IAC 8-10-9 Inspectors; reports of inspection or test

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 9. (a) All cross connection control device inspectors shall be registered with the commissioner and shall submit reports of all inspections as required by subsection (b).

(b) The inspector shall report to the supplier of water, the customer and, if requested, the commissioner, on a form provided by the commissioner, the results of inspections or tests conducted pursuant to 327 IAC 8-10-8(b) on air gaps, reduced pressure principle backflow preventers, double check valve assemblies, and pressure type vacuum breakers. Reports shall be submitted to the supplier of water and to the customer within thirty (30) days of the inspection or test. (*Water Pollution Control Board; 327 IAC 8-10-9; filed Sep 24, 1987, 3:00 pm: 11 IR 718*)

327 IAC 8-10-10 Noncompliance; retention of reports; access

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 10. (a) Because cross connections may cause disease through transmission of contaminants via the public water supply, the commissioner shall order the supplier of water to remove the customer service meter or otherwise sever the public water supply connection to any customer which the commissioner finds or has reason to believe is in violation of any provision of this rule (327 IAC 8-10).

(b) The supplier of water shall retain the six most recent reports of test conducted on reduced pressure principle backflow preventers and pressure type vacuum breakers installed in accordance with this rule (327 IAC 8-10). The supplier of water shall retain the three (3) most recent reports of inspections made of air gaps, and tests conducted on double check valve assemblies. The supplier of water shall permit access to these files at reasonable times and upon presentation of identification by representatives of the board.

(c) If so requested, the supplier of water shall submit to the commissioner copies of any report required to be retained by subsection (b). (*Water Pollution Control Board; 327 IAC 8-10-10; filed Sep 24, 1987, 3:00 pm: 11 IR 718*)

327 IAC 8-10-11 List of registered inspectors; list of approved devices

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 11. (a) The commissioner will maintain a list of cross connection control device inspectors registered in Indiana and will make the list available to the public upon request.

(b) The commissioner will maintain a listing of cross connection control devices from the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California, and will make this list available upon request. (*Water Pollution Control Board; 327 IAC 8-10-11; filed Sep 24, 1987, 3:00 pm: 11 IR 718*)

Rule 11. Water Purification and Treatment Works; Operation; Requirements

327 IAC 8-11-1 Water purification or treatment works; operation; reports; annual operator's certificate

Authority: IC 13-7-7-5; IC 13-7-14-5

Affected: IC 13-7-7-5; IC 13-7-14-5

Sec. 1. (a) All purification or treatment works producing water to be used, or available, for drinking purposes by the public, shall be properly and efficiently operated under the supervision of a competent operator or superintendent.

(b) Weekly reports of operation of such water purification or treatment works shall be submitted by the owner or operator to the commissioner. Such reports of operation shall be submitted on forms to be provided by the commissioner and shall include such items of information as may be found to be necessary by the commissioner.

(c) The commissioner shall issue annually a certificate of qualification to each qualified operator or superintendent in responsible charge of producing or delivering a safe, potable drinking water and may request the same to attend short courses or schools, whenever in the opinion of the commissioner such training is deemed necessary for the protection of the public health. (*Water Pollution Control Board; 327 IAC 8-11-1; filed Sep 24, 1987, 3:00 pm: 11 IR 718*)

Rule 12. Classification of Water and Wastewater Treatment Plants and Distribution Systems; Examination and Certification of Operators

327 IAC 8-12-1 Definitions

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-3-1.5; IC 13-1-6-2; IC 13-7-1

Sec. 1. In addition to the definitions contained in IC 13-7-1, IC 13-1-3-1.5, IC 13-1-6-2, and 327 IAC 1, the following definitions apply throughout this rule:

(1) "Acceptable experience" means employment in the actual hands-on operation of a water treatment, distribution, or wastewater treatment plant. Experience in water or wastewater treatment plant maintenance will be given fifty percent (50%) credit for operational experience for those employed solely in these areas. Experience in water laboratory will also be given fifty percent (50%) credit for operational experience for those employed solely in this area. Experience in wastewater laboratory, however, will be given full credit for operational experience for those employed solely in this area.

(2) "Applicant" means any individual person seeking certification, whether or not the person is currently employed as the operator.

(3) "Application" means written request for certification under this rule addressed to the commissioner.

(4) "Certificate" means an appropriate document, suitable for framing, attesting to the competency of the person named therein and bearing the classification of the plant that he may operate, together with date of issuance and an appropriate identifying number.

(5) "Certification card" means a card bearing the name and certificate number of the person, the classification of the plant that may be operated, and an expiration date.

(6) "Contact hour" means a fifty (50) to sixty (60) minute instructional session involving a qualified instructor or lecturer. Ten (10) contact hours equals one (1) continuing education unit (CEU).

(7) "Design population equivalent" means the PE for which the plant is designed.

(8) "Operator" means the person in direct or responsible charge and supervising the operation of a wastewater or water treatment plant and/or a water distribution system.

(9) "Population equivalent (PE)" means the calculated population which would contribute the same amount of biochemical oxygen demand (BOD) per day using the base of seventeen-hundredths (0.17) pounds of five (5) day BOD per capita per day.

(10) "Responsible charge" means the individual responsible for the overall daily operation, supervision, or management of a water or wastewater facility. In Class III, IV, C, or D plants, the individual supervising and responsible for a major section of the plant or an operating shift may be credited with responsible charge experience.

(11) "Training provider" means a person who conducts or presents a course training session approved under this rule.

(*Water Pollution Control Board; 327 IAC 8-12-1; filed Sep 24, 1987, 3:00 p.m.: 11 IR 719; filed Sep 19, 1990, 3:00 p.m.: 14 IR 259; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1230*)

327 IAC 8-12-1.1 Responsibilities

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6-2

Sec. 1.1. The owner or governing body of a water or wastewater treatment plant or water distribution system, shall notify the commissioner when there is a change in the individual serving as the certified operator in charge of the facility. The notification shall be made no later than thirty (30) days after a change in the operator. (*Water Pollution Control Board; 327 IAC 8-12-1.1; filed Sep 19, 1990, 3:00 p.m.: 14 IR 259*)

327 IAC 8-12-2 Classification of treatment plants and supply systems

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6

Sec. 2. (a) Wastewater treatment plants, other than industrial wastewater treatment plants, shall be classified in one (1) of five (5)

classifications. These classifications shall be based on the design population equivalent of the plant as follows:

- (1) Class I-SP: All waste stabilization ponds, including controlled discharge and continuous discharge, regardless of flow.
 - (2) Class I: Plants having a design population equivalent of less than two thousand (2,000).
 - (3) Class II: Plants having a design population equivalent between equal to or greater than two thousand (2,000) and less than ten thousand (10,000).
 - (4) Class III: Plants having a design population equivalent between equal to or greater than ten thousand (10,000) and less than forty thousand (40,000).
 - (5) Class IV: Plants having a design population equivalent in excess of forty thousand (40,000).
- (b) Industrial wastewater treatment plants shall be classified in one (1) of five (5) classifications. These classifications shall be based on the type of treatment afforded, design population equivalent, and the average daily flow as follows:
- (1) Class A-SO as follows:
 - (A) Primary solids removal facilities such as settling tanks, settling ponds, sand filters, and screens used for removal of settleable inorganic solids only.
 - (B) Tanks, ponds, centrifuges, and other facilities used to separate floatable oils and solids.
 - (C) In some cases, simple pH neutralization may be included. Wastewater flow is not a limiting factor in the classification of this type of treatment plant.
 - (2) Class A as follows:
 - (A) Secondary treatment facilities such as waste stabilization ponds, both anaerobic and aerobic, trickling filter and activated sludge-type treatment plants, aerated lagoons, and other biological treatment facilities that treat wastewater loads of less than two thousand (2,000) design population equivalent.
 - (B) Spray, broad, and ridge and furrow irrigation facilities that treat a wastewater flow of less than two hundred thousand (200,000) gallons per day.
 - (3) Class B as follows:
 - (A) Secondary treatment facilities such as waste stabilization ponds, both anaerobic and aerobic, trickling filter and activated sludge-type treatment plants, aerated lagoons, and other biological treatment facilities that treat wastewater loads equal to or greater than two thousand (2,000) design population equivalent and less than ten thousand (10,000) design population equivalent.
 - (B) Spray, broad, and ridge and furrow irrigation facilities that treat a wastewater flow equal to or greater than two hundred thousand (200,000) gallons per day and less than one million (1,000,000) gallons per day.
 - (C) Chemical treatment facilities such as cyanide destruction, chromium reduction, acid or alkali neutralization, coagulation and flocculation, air flotation, air stripping, wet air oxidation, ion exchange, ultrafiltration, reverse osmosis, and activated carbon filtration that handle or treat wastewater flow less than fifty thousand (50,000) gallons per day.
 - (4) Class C as follows:
 - (A) Secondary treatment facilities such as waste stabilization ponds, both anaerobic and aerobic, trickling filter and activated sludge-type treatment plants, aerated lagoons, and other biological treatment facilities that treat wastewater loads equal to or greater than ten thousand (10,000) design population equivalent and less than forty thousand (40,000) design population equivalent.
 - (B) Spray, broad, and ridge and furrow irrigation facilities that treat a wastewater flow equal to or greater than one million (1,000,000) gallons per day and less than four million (4,000,000) gallons per day.
 - (C) Chemical treatment facilities, such as cyanide destruction, chromium reduction, acid or alkali neutralization, coagulation and flocculation, air flotation, air stripping, wet air oxidation, ion exchange, ultrafiltration, reverse osmosis, and activated carbon filtration that handle or treat a wastewater flow equal to or greater than fifty thousand (50,000) gallons per day and less than two hundred thousand (200,000) gallons per day.
 - (5) Class D as follows:
 - (A) Secondary treatment facilities such as waste stabilization ponds, both anaerobic and aerobic, trickling filter and activated sludge-type treatment plants, aerated lagoons, and other biological treatment facilities that treat wastewater loads equal to or greater than forty thousand (40,000) design population equivalent.
 - (B) Chemical treatment facilities such as cyanide destruction, chromium reduction, coagulation and flocculation, air flotation, air stripping, wet air oxidation, ion exchange, ultrafiltration, reverse osmosis, and activated carbon filtration, that handle or treat a wastewater flow equal to or greater than two hundred thousand (200,000) gallons per day.
 - (C) Deep well disposal systems, thermal evaporators, and incinerators used in conjunction with liquid waste disposal.
 - (D) All industries that have two (2) or more waste treatment plants at one (1) industrial site listed in Class B or C or those industries employing highly complex waste treatment methods.
 - (E) Some industrial wastewater treatment plants may have more than one (1) treatment process involved, even though they have only one (1) treatment plant. An industrial treatment plant may be classified based on secondary treatment PE, spray irrigation volume, or chemical treatment volume, whichever is the highest classification. In these cases, the highest classification involved is the one used.

(c) Water distribution systems which serve at least twenty-five (25) service connections used by year-round residents or regularly serve at least one hundred (100) year-round residents, shall be classified in one (1) of two (2) classifications, based on population served, as follows:

(1) Class DS: Systems serving fewer than fifteen thousand (15,000) people.

(2) Class DS-L: Systems serving fifteen thousand (15,000) people or more.

(d) Water treatment plants which serve at least twenty-five (25) service connections used by year-round residents or regularly serve at least one hundred (100) year-round residents, shall be classified in one (1) of five (5) classifications, based on population served and type of treatment as follows:

(1) Class CT: Plants using chemical feed to achieve disinfection, fluoride standardization, or water stabilization, regardless of population served.

(2) Class PF: Plants using chemical feed to achieve disinfection, fluoride standardization, or water stabilization plus pressure or gravity filtration to treat well water sources for iron, manganese, or hydrogen sulfide removal and/or cation exchange softening, regardless of population served.

(3) Class GF: Plants requiring chemical feed, coagulation and flocculation, sedimentation, filtration, and disinfection, or any combination of these processes, for the purification of water to serve fewer than fifteen thousand (15,000) people.

(4) Class AT: Plants requiring the same processes as a Class GF plant, but serving more than fifteen thousand (15,000) people, or using a lime softening process, regardless of the population served.

(5) Class SP: Plants employing specific and complex treatment technology not commonly in use for drinking water treatment in Indiana.

(e) Water and wastewater treatment plants and water distribution systems will be reclassified by the commissioner if there are changes in the conditions or circumstances upon which the original classification was based. Due notice of any such change in classification shall be given to the governing body or owner and to the operators, and such notice shall indicate the classification of the operator who will be required to supervise the reclassified plant or system and how soon an operator with such qualifications must be obtained.

(f) Water and wastewater treatment plants may be given a different classification by the commissioner than indicated in subsections (a) through (d) if they incorporate special or complex equipment or features of design requiring more difficult operation, if the wastewater or raw water is unusually difficult to treat, if more than ordinary chemical or bacteriological controls are required, or if an unusually high degree of skill is required in the operation of the plant to assure the continuous production of an effluent meeting the requirements of the stream or the uninterrupted supply of safe, potable drinking water. (*Water Pollution Control Board; 327 IAC 8-12-2; filed Sep 24, 1987, 3:00 p.m.: 11 IR 719; filed Sep 19, 1990, 3:00 p.m.: 14 IR 259; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1230; errata filed Mar 9, 1995, 4:15 p.m.: 18 IR 1836*)

327 IAC 8-12-3 Qualifications of operator; classes and grades

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6-3

Sec. 3. (a) In order to operate a wastewater or water treatment plant or a water distribution system, the operator shall have qualifications as established in this section.

(b) An individual meeting the minimum requirements for a certificate shall be examined by the commissioner as to educational skills, operational experience, and knowledge related to the effective functioning of a plant or system in the classification for which he seeks certification. Applicants shall be honest, dependable, interested in their work, and have the supervisory characteristics needed to produce satisfactory operation of the plant or system. They should be of good health and physically capable of fulfilling all requirements of the job. All individuals meeting the minimum requirements must pass the examination unless exempted by statute or rule. Applicants must meet the minimum education and experience requirements prior to taking the exam.

(c) All applicants shall have the educational skills necessary to:

(1) handle fractions and decimals;

(2) read a linear scale;

(3) calculate volumes of simple shapes;

(4) make simple computations of multiplication and division;

(5) keep records;

(6) read and write the English language to the extent of interpreting service manuals and work orders and submitting written reports; and

(7) understand basic principles of sanitation.

(d) In evaluating experience qualifications of applicants, the commissioner will be guided by the applicant's work experience record with regard to the amount of technical knowledge required by the work. Acceptable experience must be the result of satisfactory accomplishment of work. Evaluation may be based on information from available sources. Experience will be measured from the date of employment of the applicant to the end of the thirty (30) day grading period following the examination.

(e) Eleven (11) classes of operators for wastewater treatment plants are established in this subsection. Qualifications are intended to relate as nearly as possible to the corresponding classifications for wastewater treatment plants as follows:

- (1) Operator-in-training, Class O.I.T. requirements shall be as follows:
 - (A) Completion of high school or equivalent.
 - (B) Three (3) months of acceptable experience in a wastewater treatment plant or completion of an approved training course.
 - (C) The certificate will be valid in industrial and municipal wastewater treatment plants. The certificate shall be issued for a one (1) year period and cannot be renewed.
- (2) Class A-SO requirements shall be as follows:
 - (A) Completion of high school or equivalent.
 - (B) One (1) year acceptable experience in a wastewater treatment plant.
 - (C) Certificate is limited to Class A-SO treatment plant operations.
- (3) Class I, Class I-SP, or Class A requirements shall be as follows:
 - (A) Completion of high school or equivalent.
 - (B) One (1) year of acceptable experience at a wastewater treatment plant.
- (4) Class II or Class B requirements shall be as follows:
 - (A) Completion of high school or equivalent.
 - (B) Three (3) years of acceptable experience at a wastewater treatment plant.
- (5) Class III or Class C requirements shall be as follows:
 - (A) Completion of high school or equivalent.
 - (B) Three (3) years of acceptable experience at a wastewater treatment plant Class II, Class B, or higher.
 - (C) Two (2) years of the three (3) years experience requirement shall be in a position of responsible charge of a Class II, Class B, or higher wastewater treatment facility.
- (6) Class IV or Class D requirements shall be as follows:
 - (A) A college degree with a major in a science curriculum or an associate's degree in a curriculum related to wastewater treatment.
 - (B) At least five (5) years of acceptable experience at a wastewater treatment plant of Class III, Class C, or higher.
 - (C) Two (2) years of the five (5) years experience requirement shall be in a position of responsible charge of a Class III, Class C, or higher wastewater treatment facility.
- (7) Substitutions of education and experience will be allowed based on the following table:

Class	Education	Experience		Substitution of Experience for Responsible Charge	Substitution of Experience for Education
		Total Required	Substitutable		
O.I.T.	High school diploma or G.E.D.	3 months	3 months See Note (4)	— — —	See Note (2)
A-SO, A, I, and I-SP	High school diploma or G.E.D.	1 year	0	— — —	See Note (2)
B and II	High school diploma or G.E.D.	3 years	1 year See Note (1)	— — —	See Note (2)
C and III	High school diploma or G.E.D.	3 years at Class B, II, or higher and 2 years responsible charge	1 year See Note (1)	See Note (5)	See Note (2)
D and IV	College degree See Note (3)	5 years at Class C, III, or higher and 2 years responsible charge	2 years See Note (1)	See Note (5)	See Note (2)

Note (1): Sixteen (16) semester hours, twenty-four (24) credit hours, or twenty-four (24) continuing education units equals one (1) year of experience. There is no substitution of education for responsible charge experience. That portion of education which is applied toward substitution for experience cannot be used for the education requirement.

Note (2): One (1) year of experience equals two (2) years of high school or six (6) months of college. One (1) year of responsible charge experience equals one (1) year of college. That portion of experience which is applied toward

substitution for education cannot be used for the experience requirement.

Note (3): One (1) year of college equals thirty-two (32) semester hours, forty-eight (48) credit hours, or four hundred eighty (480) contact hours.

Note (4): Three (3) months of experience may be substituted with the completion of a comprehensive course in wastewater treatment approved by the commissioner.

Note (5): Operational, responsible charge, and educational experience are interchangeable at the following ratios: Two (2) years of operational experience shall equal one (1) year of responsible charge experience. Two (2) years of operational experience shall equal one (1) year of college education or two (2) years of high school education. One (1) year of responsible charge experience shall equal one (1) year of college education or two (2) years of high school education. That portion of experience which is interchanged for another may not be used to satisfy any remaining experience requirement.

(f) Two (2) grades of water distribution system operators and five (5) grades of water treatment plant operators are established in this subsection. The additional qualifications for each class of operator, and the basic plant or system which an operator in any class is qualified to operate, are as follows:

(1) Grade DS: A Grade DS operator is qualified to operate a Class DS water distribution system. He must have high school education, or its equivalent, and possess the educational skills listed in subsection (c). In addition, he must have had a minimum of one (1) year of acceptable work experience in the operation of a water distribution system.

(2) Grade DS-L: A Grade DS-L operator is qualified to operate a Class DS or a Class DS-L water distribution system. He must have high school education or its equivalent and possess the educational skills listed in subsection (c). In addition, he must be able to maintain inventories, order supplies or equipment, and interpret chemical and bacteriological sample reports. Furthermore, he must have had a minimum of one (1) year of acceptable work experience in the operation of a Class DS-L water distribution system or three (3) years of acceptable work experience in the operation of a Class DS water distribution system.

(3) Grade CT: A Grade CT operator is qualified to operate a Class CT water treatment plant. He must have high school education or its equivalent and possess the educational skills listed in subsection (c). In addition, he must be able to maintain inventories, order supplies or equipment, and interpret chemical and bacteriological sample reports. Furthermore, he must have had a minimum of one (1) year of acceptable work experience in the operation of a Class CT water treatment plant.

(4) Grade PF: A Grade PF operator is qualified to operate a Class CT or Class PF water treatment plant. He must have completed high school or its equivalent and possess the educational skills listed in subsection (c). In addition, he must be able to maintain inventories, order supplies or equipment, and interpret chemical and bacteriological sample reports. Furthermore, he must have had a minimum of two (2) years of acceptable work experience in the operation of a Class PF water treatment plant. Successful completion of educational work at college level in engineering, chemistry, or science related to water treatment may be substituted for work experience at the ratio of four (4) semesters or six (6) quarters of schooling for a total of one (1) year of experience.

(5) Grade GF: A Grade GF operator is qualified to operate a Class CT, a Class PF (without ion exchange and with fewer than fifteen thousand (15,000) population), or Class GF water treatment plant. He must have completed high school or its equivalent and possess the educational skills listed in subsection (c). In addition, he must be able to maintain inventories, order supplies or equipment, and interpret chemical and bacteriological sample reports. Furthermore, he must have had a minimum of two (2) years of acceptable work experience in the operation of a Class GF water treatment plant. Successful completion of educational work at college level in engineering, chemistry, or science related to water treatment may be substituted for work experience at the ratio of four (4) semesters or six (6) quarters of schooling for a total of one (1) year of experience.

(6) Grade AT: A Grade AT operator is qualified to operate a Class CT, Class PF, Class GF, or Class AT water treatment plant. He must have completed high school or its equivalent and possess the educational skills listed in subsection (c). In addition, he must have the ability to use conversion factors, solve simple mathematical equations, understand simple chemical laboratory equipment, understand the bacteriological procedures used in water supply work, maintain inventories, and order supplies or equipment. Furthermore, he must have had a minimum of three (3) years of acceptable work experience in the operation of a Class AT water treatment plant or five (5) years of acceptable work experience in the operation of a Class PF or Class GF water treatment plant. Successful completion of educational work at college level in engineering, chemistry, or science related to water treatment may be substituted for work experience at the ratio of four (4) semesters or six (6) quarters of schooling for a year of experience, up to a total of two (2) years of experience.

(7) Grade SP: A Grade SP operator is qualified to operate a Class SP water treatment plant. Until any of these special types of plants have become established as routine treatment in the water works industry, the qualifications of the operator will be determined on an individual plant basis by the commissioner.

(8) A Grade PF, GF, or AT operator is qualified to treat wastewater from a water treatment plant provided he is certified to operate that class water treatment plant.

(g) An operator may be designated as being in responsible charge of more than one (1) water or wastewater treatment plant or more than one (1) water distribution system, if it can be shown that he will give adequate supervision to all units involved. Adequate supervision means that sufficient time is spent at the plant on a regular basis to assure that the operator is knowledgeable of the actual operations and that test reports and results are representative of the actual operational conditions.

(h) All persons employed or experienced in the operation of water and wastewater treatment plants and water distribution systems are encouraged to become certified, even though only one (1) person shall be designated by the governing body as the certified operator with complete responsibility for the proper operation of the water or wastewater facility. (*Water Pollution Control Board; 327 IAC 8-12-3; filed Sep 24, 1987, 3:00 p.m.: 11 IR 721; filed Sep 19, 1990, 3:00 p.m.: 14 IR 262; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1232; errata filed Mar 9, 1995, 4:15 p.m.: 18 IR 1836*)

327 IAC 8-12-4 Examination of applicants

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6-3

Sec. 4. (a) A standardized examination shall be used in testing knowledge, ability, and judgment of the applicants.

(b) Examinations shall be held at places and times set by the commissioner with at least sixty (60) days advanced announcement. Examinations shall be conducted at least annually.

(c) All examinations shall be held on the date announced except in such cases as may be declared necessary exceptions by the commissioner.

(d) An applicant wishing to take an examination for certification shall complete an application form provided by the commissioner and file it, with the necessary fee, in the office of the commissioner not later than forty-five (45) days preceding the date of the examination. The information supplied on the application shall be true and correct to the best of the applicant's knowledge, and any omissions or misrepresentations may result in ineligibility for the examination applied for or revocation of any certificate granted.

(e) An applicant seeking certification without examination by reciprocal recognition or on a provisional basis may file the application and fee at the applicant's convenience, subject to expiration dates delineated in other sections of this rule.

(f) The commissioner shall review applications and supporting documents concerning the eligibility of the applicant and notify the applicant in writing of the applicant's status and of the time and place of examination, if the applicant is to take an examination. This notification shall be an admission slip to be presented at the time and place of the examination. A person may elect not to take the next examination until the next examination date, which will be offered six (6) months later, if the person feels extenuating circumstances exist. However, only one (1) postponement will be allowed.

(g) All examinations will be graded and the applicants notified of the results. A grade on the examination of seventy percent (70%) or better must be achieved in order to pass the examination. Examination papers will not be returned to the applicants, but an individual may review his or her test up to ninety (90) days prior to the next scheduled examination by submitting a written request to the commissioner.

(h) Different examinations will be prepared to reflect the basic differences in the duties and responsibilities required of applicants to operate the varying classifications of plants and systems.

(i) An applicant who has been notified and scheduled to take an examination, but does not attend without prior notification to the commissioner, will be considered to have failed that examination. An applicant who is caught cheating on an examination will also be considered to have failed that examination and will not be eligible to take any examination for the next two (2) years.

(j) An applicant previously certified under this rule who failed to meet the renewal requirements under this rule shall show proof of continuing education before being accepted to retake an examination. The amount of continuing education shall be equivalent to that required for one (1) renewal period, as specified in section 7(h) of this rule.

(k) An operator holding a valid municipal certificate of any level (Class I, Class II, Class III, or Class IV) may obtain a Class A industrial certificate without examination by submitting an application for the Class A certificate. An operator holding a valid industrial certificate of any level (Class A, Class B, Class C, or Class D) may obtain a Class I municipal certificate without examination by submitting an application for the Class I certificate. (*Water Pollution Control Board; 327 IAC 8-12-4; filed Sep 24, 1987, 3:00 p.m.: 11 IR 723; filed Sep 19, 1990, 3:00 p.m.: 14 IR 265; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1235*)

327 IAC 8-12-5 Certification fees

Authority: IC 13-14-8; IC 13-18-11-13

Affected: IC 13-16; IC 13-18-11-5; IC 13-18-11-6; IC 36-1-2-23

Sec. 5. (a) Fees for certification shall be as follows:

Certification, including certificate	\$30
Certification by examination for a new classification	\$30
Biennial renewal fee	\$30

(b) No fees paid by an applicant who is not qualified to take the examination or who fails to pass will be returned. (*Water Pollution Control Board; 327 IAC 8-12-5; filed Sep 24, 1987, 3:00 p.m.: 11 IR 724; filed Sep 19, 1990, 3:00 p.m.: 14 IR 266; filed Oct 22, 1991, 5:00 p.m.: 15 IR 225; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1236; errata filed Mar 9, 1995, 4:15 p.m.: 18 IR 1836; filed Sep 3, 1996, 3:00 p.m.: 20 IR 12*)

327 IAC 8-12-6 Certification; reciprocity; provisional certificate

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6-4

Sec. 6. (a) The commissioner shall issue a suitable certificate designating competency in the appropriate classification to each person who makes proper application when the applicant has met the necessary requirements of education and experience and has been found competent in his classification by examination.

(b) The commissioner may issue a certificate by reciprocity as outlined in IC 13-1-6-4. An application for such a certificate shall include proof of the current certification and classification of the applicant. To transfer a certificate by reciprocity from another state, no continuing education contact hours of credit will be required initially. However, after the transfer, for all future renewal periods, the required number of continuing education contact hours must be earned and credited.

(c) The commissioner may issue a provisional certificate, if necessary, to fill a vacancy created by death, resignation, extended illness, or similar cause when the governing body or owner of a treatment plant or water distribution system makes written request. The written request shall specify the existence of the vacancy and the name, education, and experience qualifications of the person for whom the provisional certificate is requested. The request shall be accompanied by an application in proper form from the named provisional certificate nominee requesting examination and certification. The provisional certificate will be issued only if the individual is eligible for the next scheduled examination.

(d) The provisional certificate normally will be for the period between the date of application and the end of the thirty (30) day grading period following the next examination which is available to the applicant, but not exceeding a period of one (1) year. It will be in the form of a letter delineating the conditions of the certification. (*Water Pollution Control Board; 327 IAC 8-12-6; filed Sep 24, 1987, 3:00 p.m.: 11 IR 724; filed Sep 19, 1990, 3:00 p.m.: 14 IR 266; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1236*)

327 IAC 8-12-7 Certificates and certification cards; renewal; duplicates

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6-3

Sec. 7. (a) Certificates will be permanent in nature but will be effective only when validated by a current certification card. No certificate will be valid if obtained through fraud, deceit, or by the submission of inaccurate data on the application.

(b) A certificate issued on the basis of the applicant's having been in responsible charge of the treatment plant or distribution system (on July 1, 1968, for wastewater treatment plants, or on July 1, 1972, for water treatment plants and distribution systems) shall remain valid until there is a change in the classification of the plant or system, or until such time as the operator is no longer in direct responsible charge. Such a change may be based on increased capacity, an increase in population served, a basic change in the method of treatment, or other change in conditions which requires a more difficult operation.

(c) Certificates will be dated with the month and year when the applicant qualified and the certificate was issued. The certificate of each operator shall be displayed prominently in his office. An operator who supervises more than one (1) plant or system shall obtain a duplicate certificate to display in the office of each utility supervised.

(d) Certification cards shall be issued for periods of no more than twenty-four (24) months and shall expire on the last day of June nearest the end of the biennial period.

(e) In the event that a replacement or duplicate certificate is needed, the operator must make a written request to the commissioner. The request must state the class or grade of the operator, the name and classification of the plant to be operated, the date of issuance of the original certificate if known, and the certificate number.

(f) The commissioner shall notify each certified person by letter, mailed to the last known address filed with the commissioner, of the expiration date of his certification card and the amount of the fee required for its renewal. Such notice shall be mailed at least thirty (30) days prior to expiration of the certification card. The biennial renewal fee shall be due and payable on or before the first day of July of the biennial period for which a certification card is to be issued. The notice shall be signed and returned with the renewal fee to the commissioner's office.

(g) A certification card that has not been renewed on time may be reinstated by the payment of any arrearage of fees, arrearage of continuing education credit, current continuing education credit, and current renewal fee. Certification cards which are not renewed within the time limit established in IC 13-1-6-3(d) shall only be reinstated by reapplication and examination.

(h) All certified wastewater treatment plant, water treatment plant, and distribution system operators are required to obtain proof of continuing education prior to having their certification card renewed. Continuing education credits required to be obtained during each

two (2) year period are as follows:

- (1) Wastewater treatment plant operators as follows:
 - (A) Class I-SP and Class A-SO, complete five (5) contact hours of training. For Class I-SP or Class A-SO certification cards expiring June 30, 1994, the operator shall complete continuing education requirements by June 30, 1996. For Class I-SP and Class A-SO certification cards expiring June 30, 1995, the operator shall complete continuing education requirements by June 30, 1997.
 - (B) Class A, Class B, Class I, and Class II, complete ten (10) contact hours of training.
 - (C) Class C, Class D, Class III, and Class IV, complete twenty (20) contact hours of training.
 - (D) Operators holding a Class O.I.T. certificate will not be required to obtain continuing education.
- (2) Water treatment plant operators as follows:
 - (A) Class DS, complete five (5) contact hours of training.
 - (B) Class DS-L and Class CT, complete ten (10) contact hours of training.
 - (C) Class PF and Class GF, complete fifteen (15) contact hours of training.
 - (D) Class AT and Class SP, complete twenty (20) contact hours of training.
- (i) The continuing education requirement of this section shall commence as follows (excluding Class I-SP and Class A-SO certifications, which are covered in subsection (h)):
 - (1) For certification cards expiring June 30, 1990, the operator shall complete continuing education requirements by June 30, 1992, and by June 30 every two (2) year period thereafter.
 - (2) For certification cards expiring June 30, 1991, the operator shall complete continuing education requirements by June 30, 1993, and by June 30 every two (2) year period thereafter.
- (j) For those holding multiple certifications, duplicate continuing education credit may be given for training in subjects applicable to each type of certification held. Those holding certification in water and wastewater must meet the continuing education requirement for both programs.
- (k) Wastewater operators holding both an industrial and municipal certificate will not be required to obtain continuing education for both certificates (assuming both certificates expire on the same date). An operator can still meet requirements for both certificates even if each certificate expires on different dates, if the operator obtains all continuing education credits during the one (1) year that both certificates overlap. The person must meet the continuing education requirement for the highest certificate held. (*Water Pollution Control Board; 327 IAC 8-12-7; filed Sep 24, 1987, 3:00 p.m.: 11 IR 724; filed Sep 19, 1990, 3:00 p.m.: 14 IR 267; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1236*)

327 IAC 8-12-7.1 Continuing education credit; criteria for approval

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 13-1-6-3

Sec. 7.1. (a) Procedures and criteria for approving continuing education contact hour credit to satisfy the requirements of section 7(h) of this rule are as follows:

- (1) Any training provider may apply to the commissioner for approval of a course. The application must be submitted to the commissioner. The application must:
 - (A) be submitted at least sixty (60) days before the first date on which the course is offered;
 - (B) contain the information required in subdivision (4); and
 - (C) be accompanied by the written course outline or brochure.
- (2) The commissioner shall approve the course if it meets the following requirements:
 - (A) The course deals with matters related directly to water distribution, water or wastewater treatment, or the professional responsibility of certified operators.
 - (B) Each instructor/speaker is qualified by academic work or practical experience to teach the assigned subject.
- (3) An operator may apply for approval of a course either before or after the date on which it is offered. The application must contain the information required in subdivision (4). The operator must supply written proof of attendance within thirty (30) days after course completion.
- (4) Any application for approval of a course shall be made on a form furnished by the commissioner which contains the following:
 - (A) Name, address, and telephone number of sponsor/training provider.
 - (B) Name of course.
 - (C) Specific topics on which there are to be presentations.
 - (D) Time devoted to each topic.
 - (E) Instructor (name, educational background, professional experience, and current professional affiliation).
 - (F) Dates and locations at which the course will be offered.
- (b) Continuing education contact hours of credit earned in another state must be reviewed and approved even if that particular state has reciprocity with the state of Indiana for the purpose of transferring a certificate of competency.

(c) All training providers must maintain records on the date of the training, the names of all individuals attending the training session, length of the session, the instructor's name, the program content, and the organization sponsoring the training. These records shall be maintained for a five (5) year period.

(d) Training providers must submit a record of individuals attending courses within thirty (30) days of the conclusion of the course. These records shall be maintained for a five (5) year period. The form for submitting proof of attendance will be supplied by the commissioner. The form will contain the following:

(1) Name of course.

(2) Name of individual attending course.

(3) Date of course.

(e) Individuals who are instructors for a training session or classroom will be given the same credit as the individuals receiving the training. Partial credit will not be given to instructors or individuals participating in a portion of a seminar. (*Water Pollution Control Board; 327 IAC 8-12-7.1; filed Sep 19, 1990, 3:00 p.m.: 14 IR 268; filed Dec 12, 1994, 4:39 p.m.: 18 IR 1237*)

327 IAC 8-12-8 Revocation of certification

Authority: IC 13-1-6-7; IC 13-7-7

Affected: IC 4-21.5; IC 13-1-6-3

Sec. 8. The commissioner may revoke the certificate of any operator, following a hearing pursuant to IC 4-21.5, when it is found that the operator has violated any of the provisions set out in IC 13-1-6-3(f). (*Water Pollution Control Board; 327 IAC 8-12-8; filed Sep 24, 1987, 3:00 pm: 11 IR 725*)